

**PART**<sup>®</sup>  
SOLUTIONS



# Building Competitive Advantage

Cataloging & Managing Standards  
Reducing program costs and improving product Quality through Standardization and Reuse

**Parts Standardization & Management  
Committee Conference  
Nov 13-16 2006**

PARTsolutions LLC



# PARTsolutions Core Competencies



- Digital Parts Catalogs and Product Portals for Component Manufacturers and CAD companies
- Enterprise Intelligent Parts Management
- SDO's- Standard Organization Relationship (ASME)

## eCATALOGsOLUTIONS

Electronic product catalog

## PARTCOMMUNITY

e-Engineering Portal  
e-Shop

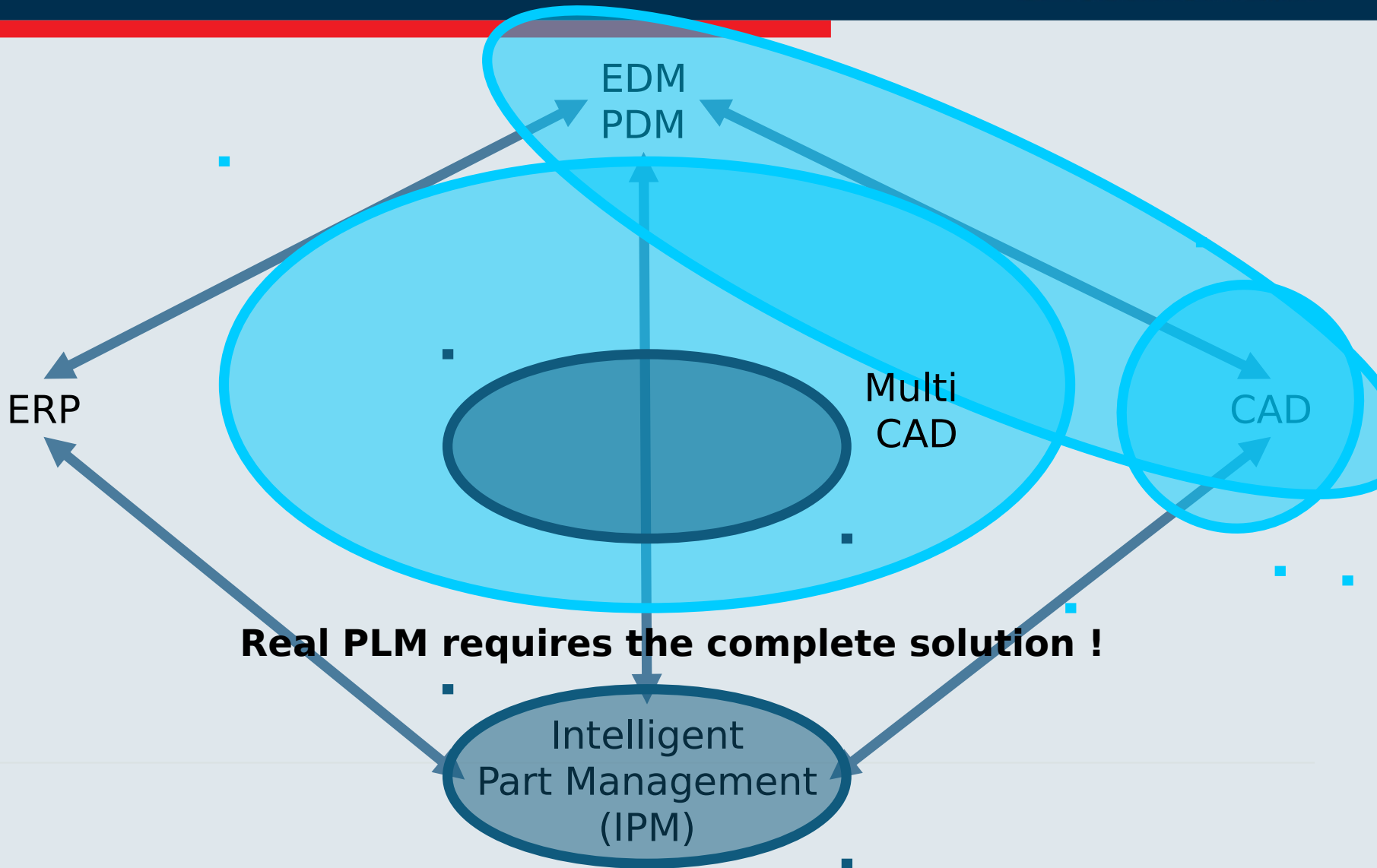
## PARTsOLUTIONS

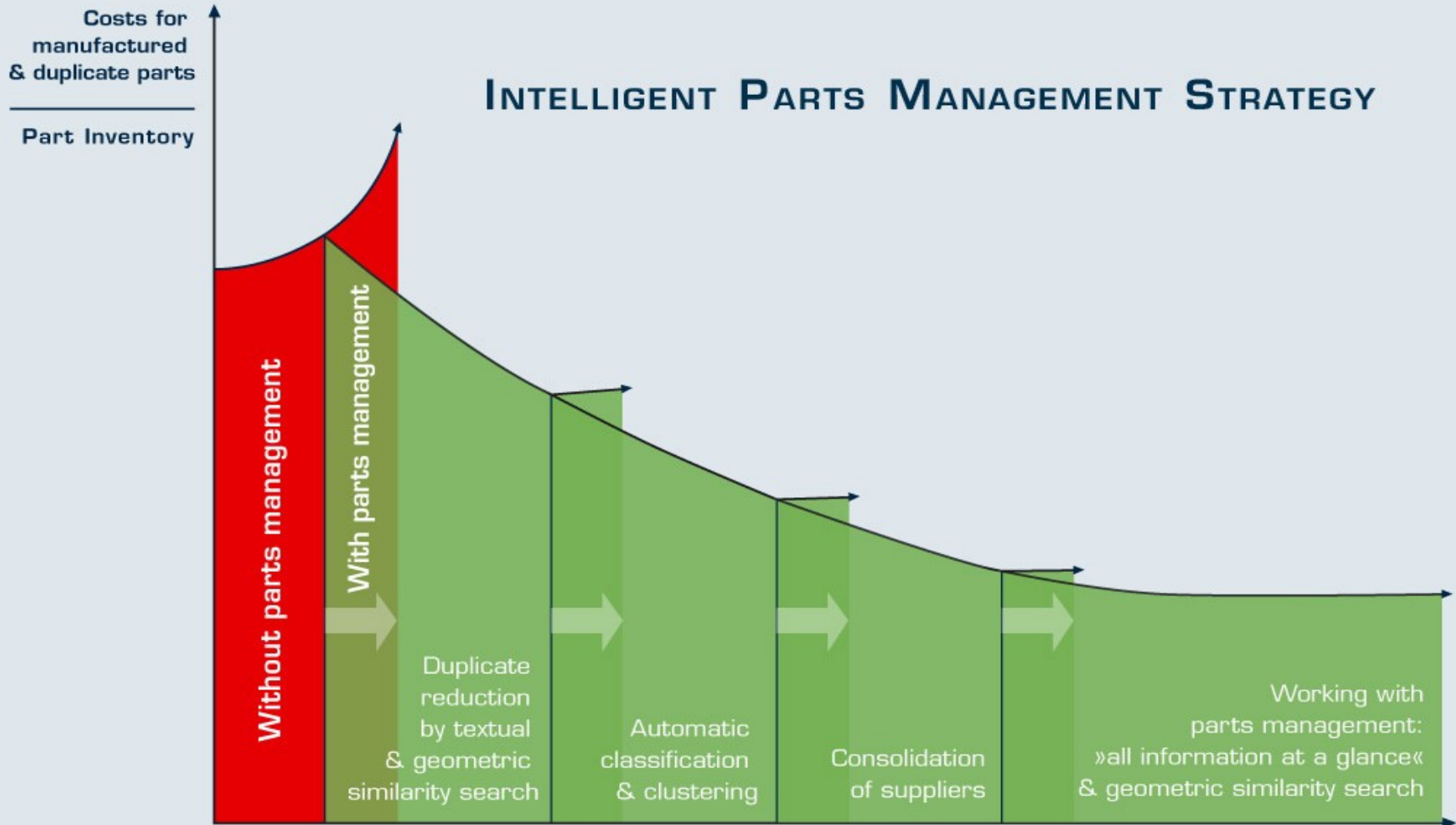
Intelligent Parts Management with ERP/PDM integration

## PARTWAREHOUSE

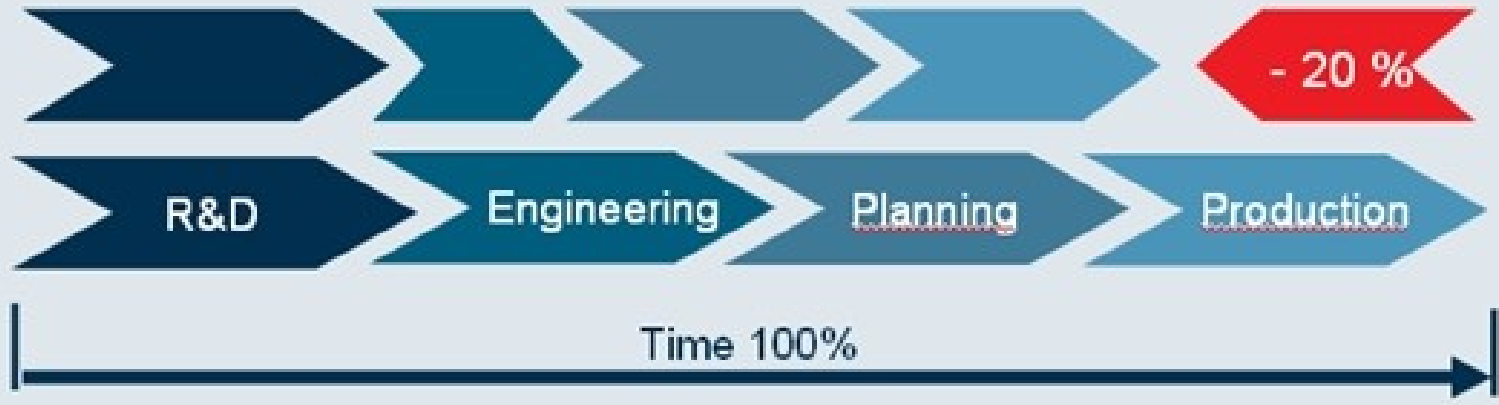
Parts Consolidation & Geometrical Similarity Search & Knowledge Database

# The Market Needs Complete Solutions



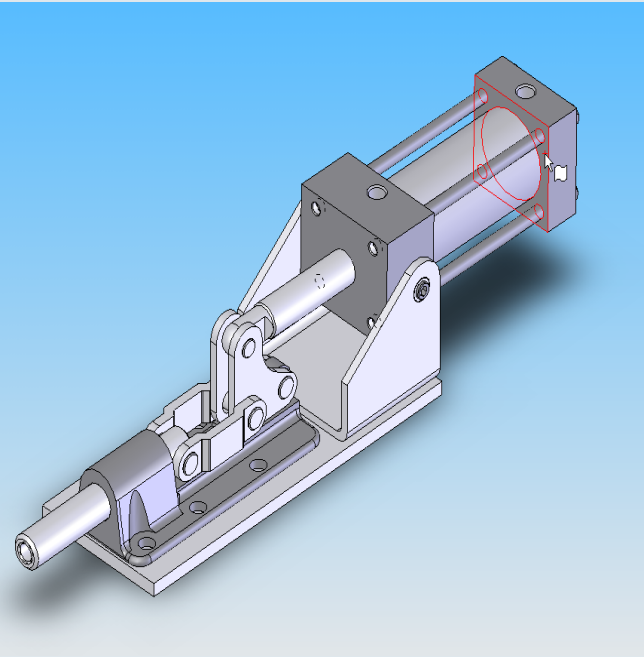
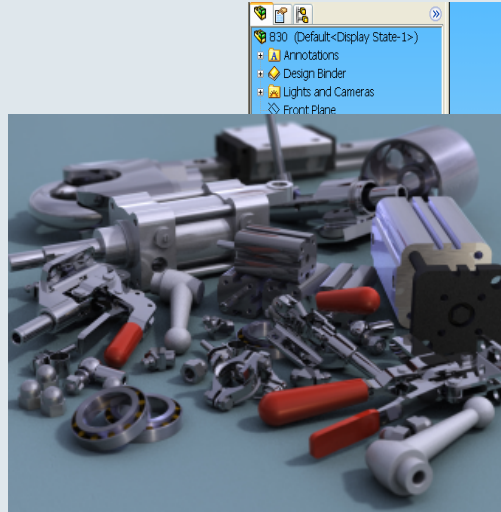


# Traditional cost reduction focus for an Enterprise



# Traditional Design Approach.....

## The Introduction of new parts



# Problems with Tradition.....

*Standard/commercial parts are difficult to manage and reuse because:*

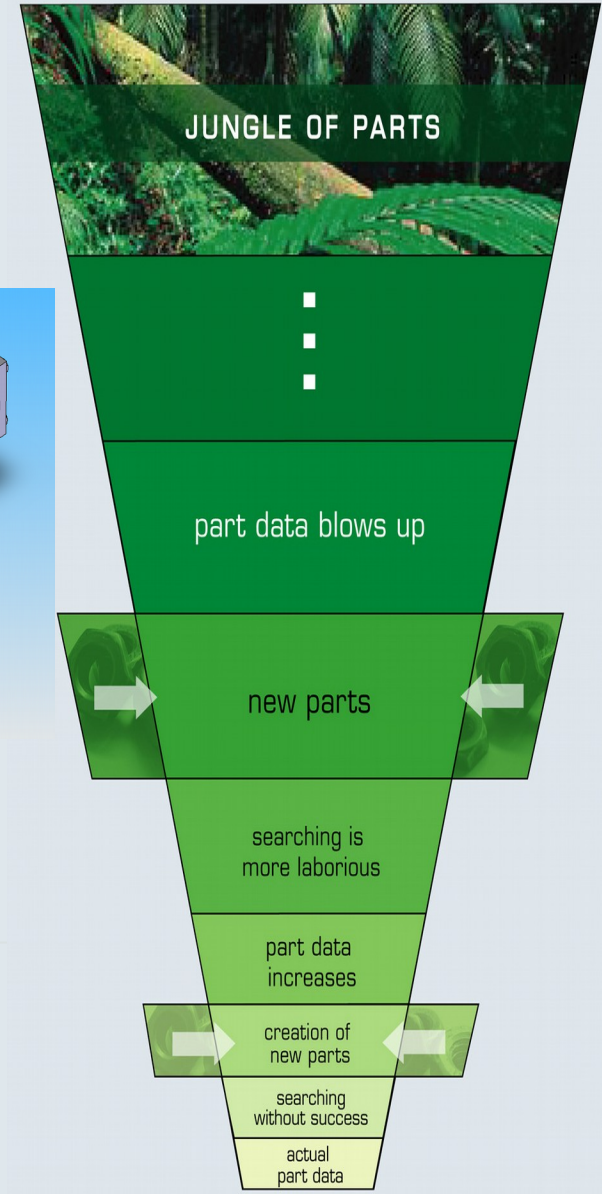
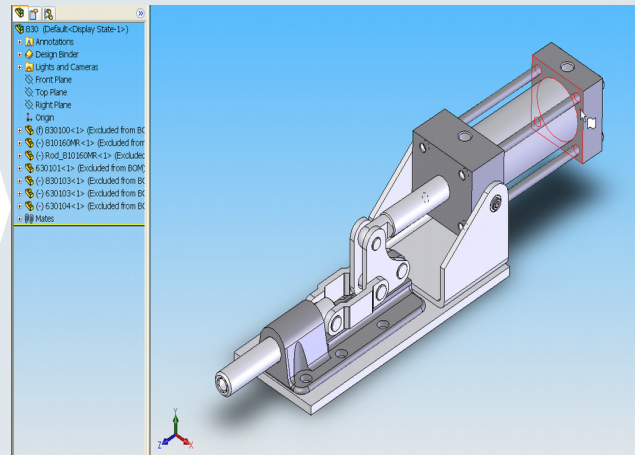
- Incomplete part descriptions
- Lack of common classification
- Disconnected databases
- Missing or inadequate information
- Engineers can't find what they need

Resulting in...

- = Duplicate and similar parts get created
- = Increased costs and the ***“Jungle of Parts”***



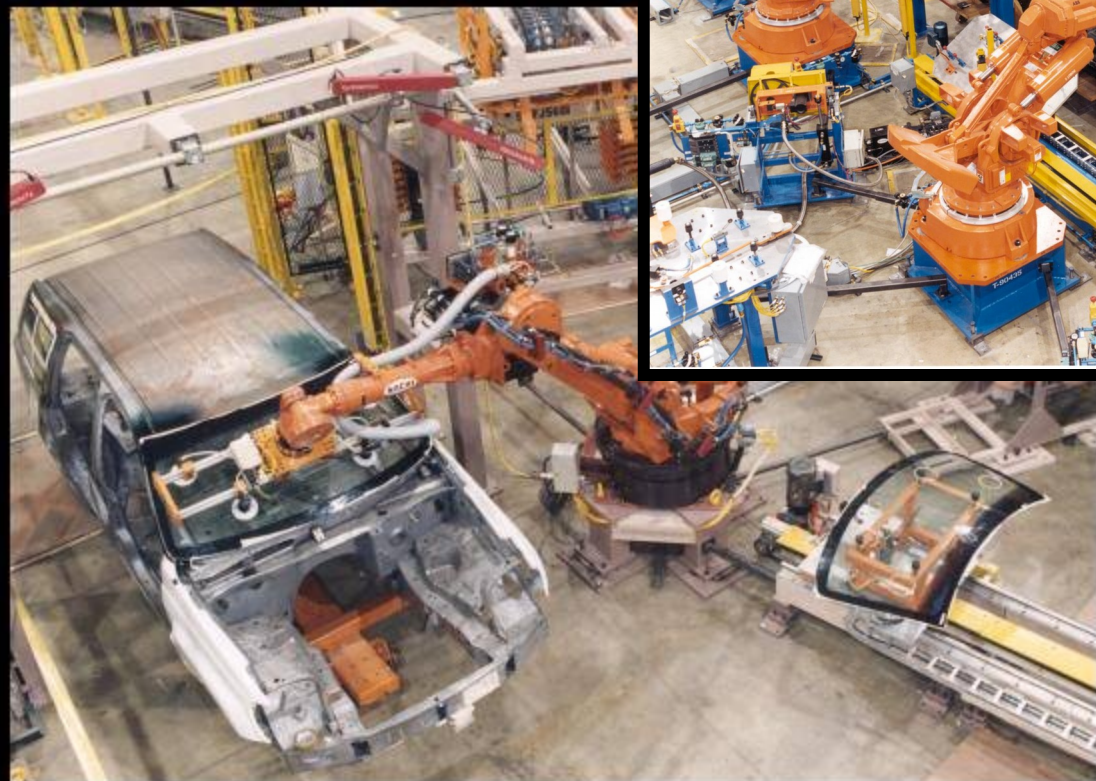
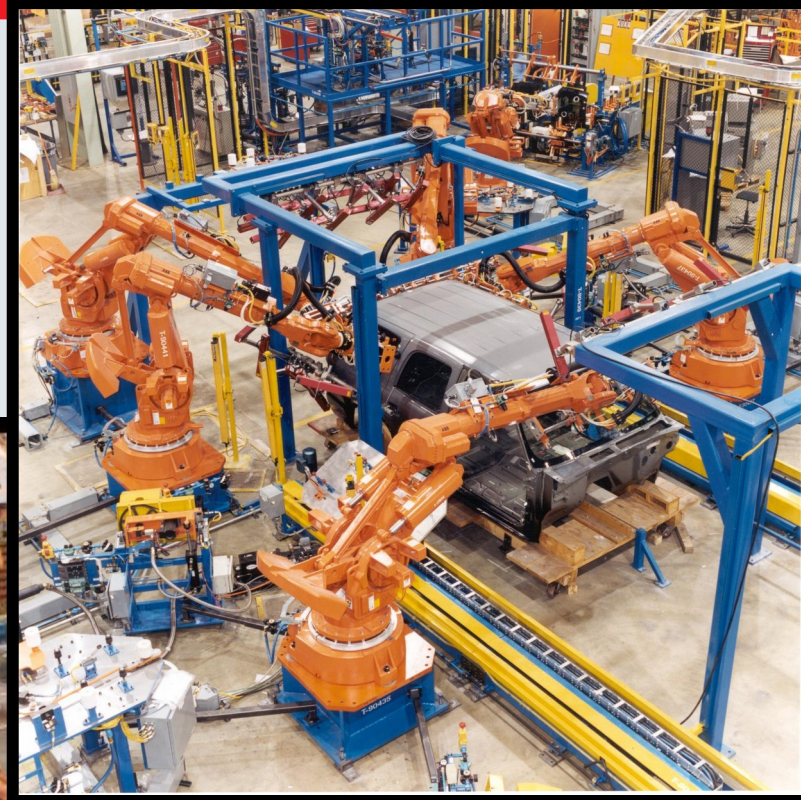
# Creating the Jungle.....





A typical problem our Customers face.....

**PART**  
SOLUTIONS



90 % of these parts are “off-the-shelf”

## Aberdeen Group Findings...

“For an engineer to consider incorporating a standard part in a new design, the engineer must first know that it exists and be able to find it.”

“27% of total time is routinely spent looking through databases and in-house libraries...”

“18% of total time is devoted to reentering and re-creating part information that already exists but can't easily be found.”

**45% of an engineers total time is spent looking for parts!**

*Bottom line... if an engineer can't find what they need or don't have confidence in what they do find they will simply create a new part.*

# Customer Example - Commercial

## Siemens Transportation Systems

250,000 total parts (custom & commercial)

11,762 parts were provided as a sampling

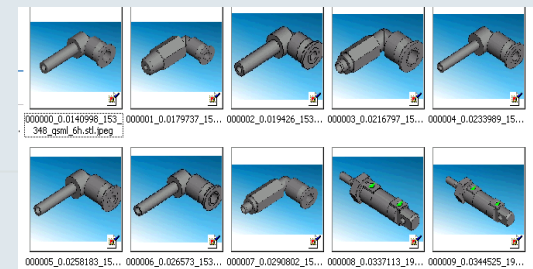
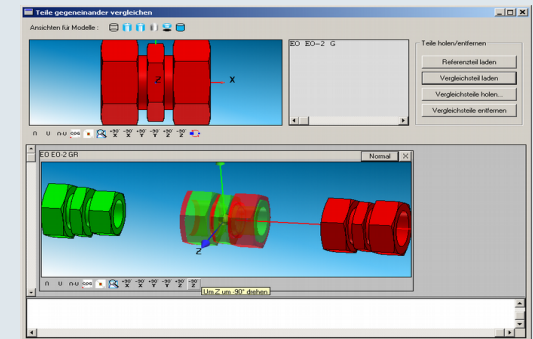
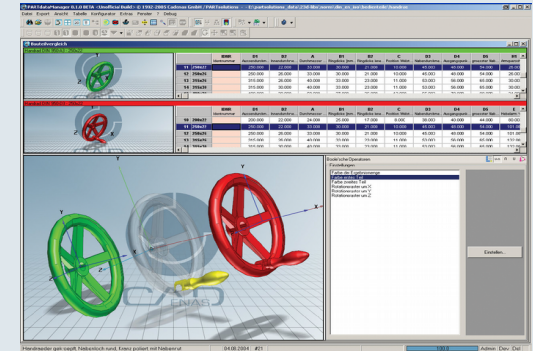
Grouped by name, size, material...

479 duplicates were identified (4%)

$250,000 \times 4\% = 10K$  possible duplicates

\$1,300 = estimated cost per part

$10,000 \text{ SKUs} \times \$1,300/\text{part} = \$13M$  savings



# Customer Example - Government

## US Department of Defense

Engineering and design = \$9,300

Testing = \$700

Manufacturing = \$1,750

Purchasing = \$3,800

Inventory = \$875

Maintenance = \$3,750

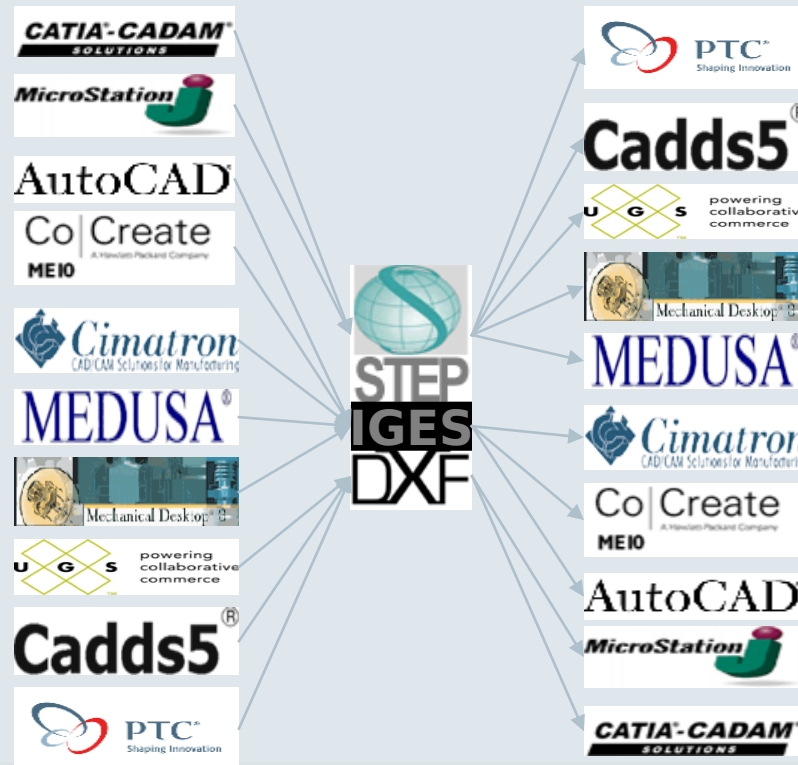
Total cost of a new part = \$20,000



Source: Defense Logistics Agency, Parts Standardization & Management Committee

# Traditional Data Migration Issues.... Translations!

## Dated Approach



Disadvantage: loss of data

# Single Source of Authoritative Shape Data...

Parametric based and driven from electronic data files



The screenshot displays the PARTdataManager 8.0.24 Build 15104 interface. At the top, a menu bar includes File, Export, View, Table, Configurator, Extras, and Window. Below the menu is a toolbar with various icons. The main window shows a data table with columns: F234PIN, NOM SIZE, THREAD, L, LG, LT, RBD, MATFIN, \* F7, F7PIN, PREF, \* TS, TENSTR, \* PL, and PROOFLOAD. Row 2051 is highlighted in blue. A 'Material selection 8.0.25 Build 15109' dialog box is open, showing a tree view of 'ASTM Material Specifications' with 'Zinc Plate - ASTM A 153' selected. A 3D model of a bolt is shown in the bottom right, with a coordinate system (X, Y, Z) and a technical drawing of a 'Rolled Thread' bolt with dimensions L, LG, LT, and E. A blue text box on the left contains the text: 'Dynamic "build-on-the-fly" 3D Standard Part geometry creation from the authored shape and simple dimensional table from the single source repository'. Blue arrows point from the text box to the data table, the material selection dialog, and the 3D model.

	F234PIN Field 234 PIN...	NOM SIZE Nominal Size	THREAD Thread	L Length	LG Grip	LT Thread Length...	RBD Reduced Bod...	MATFIN Select Matena...	* F7 Select Feature	F7PIN Field 7 PIN	PREF Usage Notes	* TS Select Tensile...	TENSTR Tensile Streng...	* PL Select Proof L...	PROOFLOAD Proof Load Lbs.
2049	C625B50	.625	.625-11 UNC-2A	2.500	1.000	1.500	No	-	Plain End-No Additional Features	1	Common	-	0	-	0
2050	F625B50	.625	.625-18 UNF-2A	2.500	1.000	1.500	No	-	Plain End-No Additional Features	1	Common	-	0	-	0
2051	C62540R	.625	.625-11 UNC-2A	2.500	1.000	1.500	Yes	APSA2	Plain End-No Additional Features	1	Common	-	0	-	0
2052	F62540R	.625	.625-18 UNF-2A	2.500	1.000	1.500	Yes	-	Plain End-No Additional Features	1	Common	-	0	-	0
2053	C625B62	.625	.625-11 UNC-2A	2.625	1.125	1.500	No	-	Plain End-No Additional Features	1	Common	-	0	-	0
2054	F625B62	.625	.625-18 UNF-2A	2.625	1.125	1.500	No	-	Plain End-No Additional Features	1	Common	-	0	-	0
2055	C62542R	.625	.625-11 UNC-2A	2.625	1.125	1.500	Yes	-	Plain End-No Additional Features	1	Common	-	0	-	0
2056	F62542R	.625	.625-18 UNF-2A	2.625	1.125	1.500	Yes	-	Plain End-No Additional Features	1	Common	-	0	-	0
2057	C625B75	.625	.625-11 UNC-2A	2.750	1.250	1.500	No	-	Plain End-No Additional Features	1	Common	-	0	-	0

Dynamic "build-on-the-fly" 3D Standard Part geometry creation from the authored shape and simple dimensional table from the single source repository

Recommended materials | Additional materials

- ASTM Material Specifications
  - ASTM A 183 - Carbon Steel Track Bolts and Nuts
  - ASTM A 193/193M - Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Applications
  - ASTM A 194/194M - Carbon and Alloy Steel Nuts for Bolts for High-Pressure Applications
  - ASTM A 307 - Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength
  - ASTM A 307, Grade A
    - Plain, No Finish
    - ASTM A 153 - Zinc Coating (Hot-Dip) on Iron and Steel Hardware
    - Zinc Plate - ASTM A 153
    - ASTM B 633 - Zinc Coating (Hot-Dip) on Iron and Steel Hardware
    - ASTM B 695 - Coatings of Zinc Mechanically Deposited on Iron and Steel

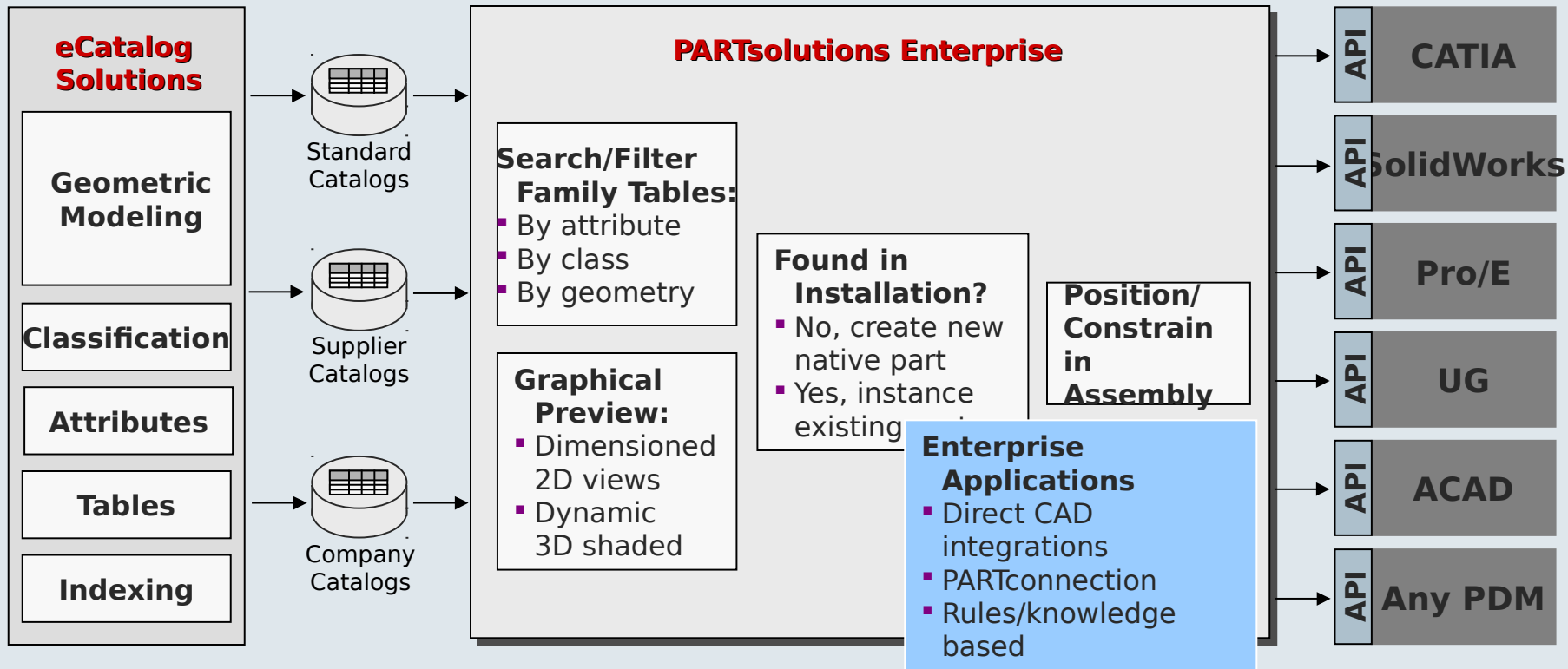
# PARTsolutions Technology In A Nutshell...

Providing 100% native data from the author to the consumer



## CAD - Independent (Authoritative Source)

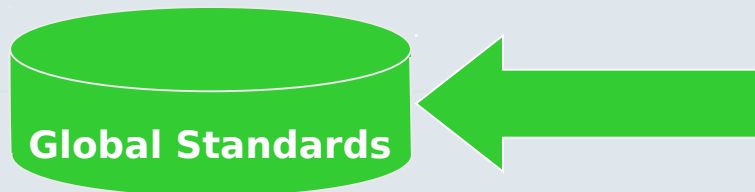
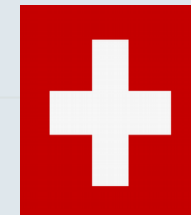
## CAD - Native



...70 other graphical & shape outputs supported, including versions of all major CAD/PDM/ERP apps

## Global Standards

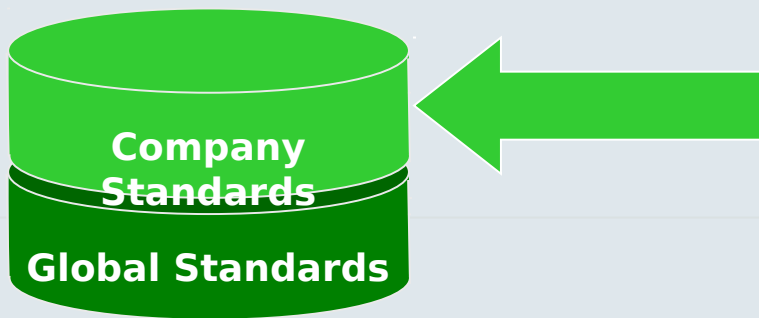
Global standards for design and manufacturing processes





## Company Standards

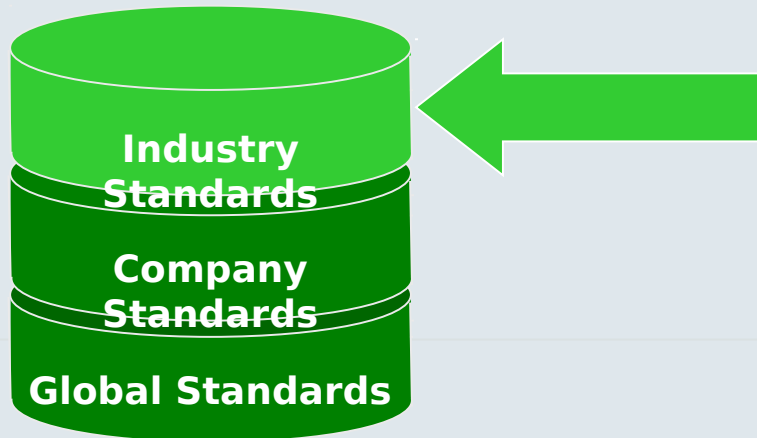
Company specific standards that are exposed to their supply chain



## Industry Specific Standards

Standards that are governed by government and industry committees

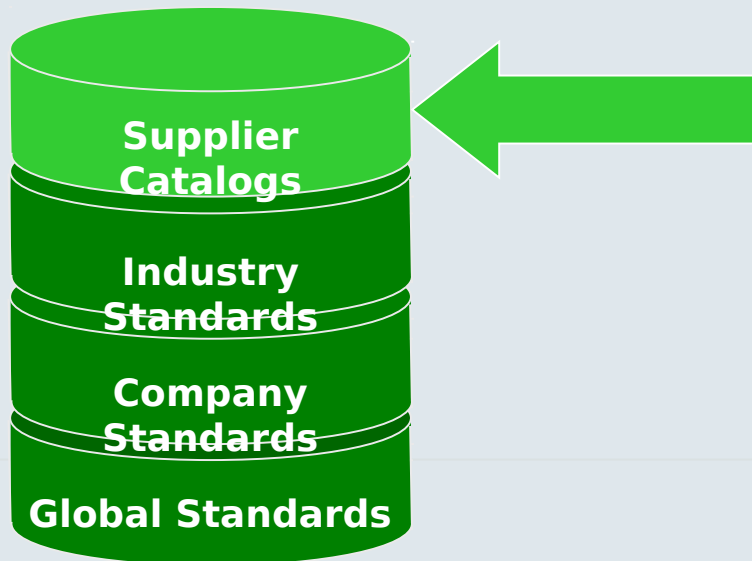
AIA, MS, ASME, SAE, etc...



# Clustering and Classifying Standards...

## Supplier Catalogs

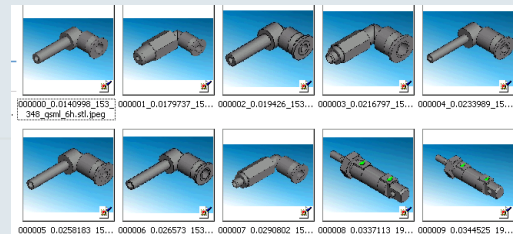
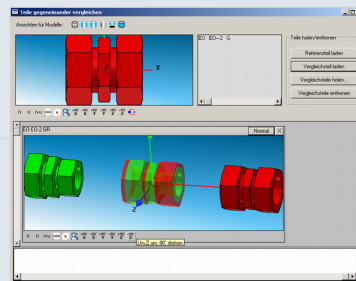
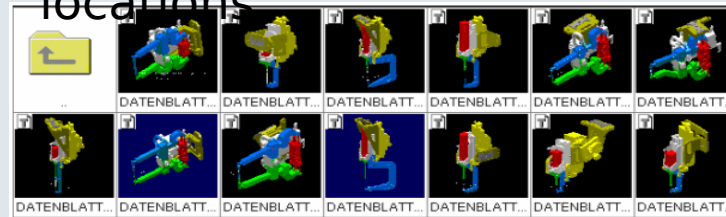
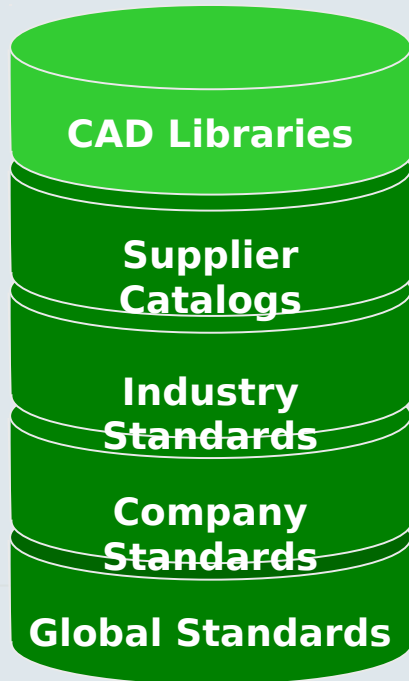
Vendor/supplier parts that are approved and being used in your products



# Clustering and Classifying Standards...

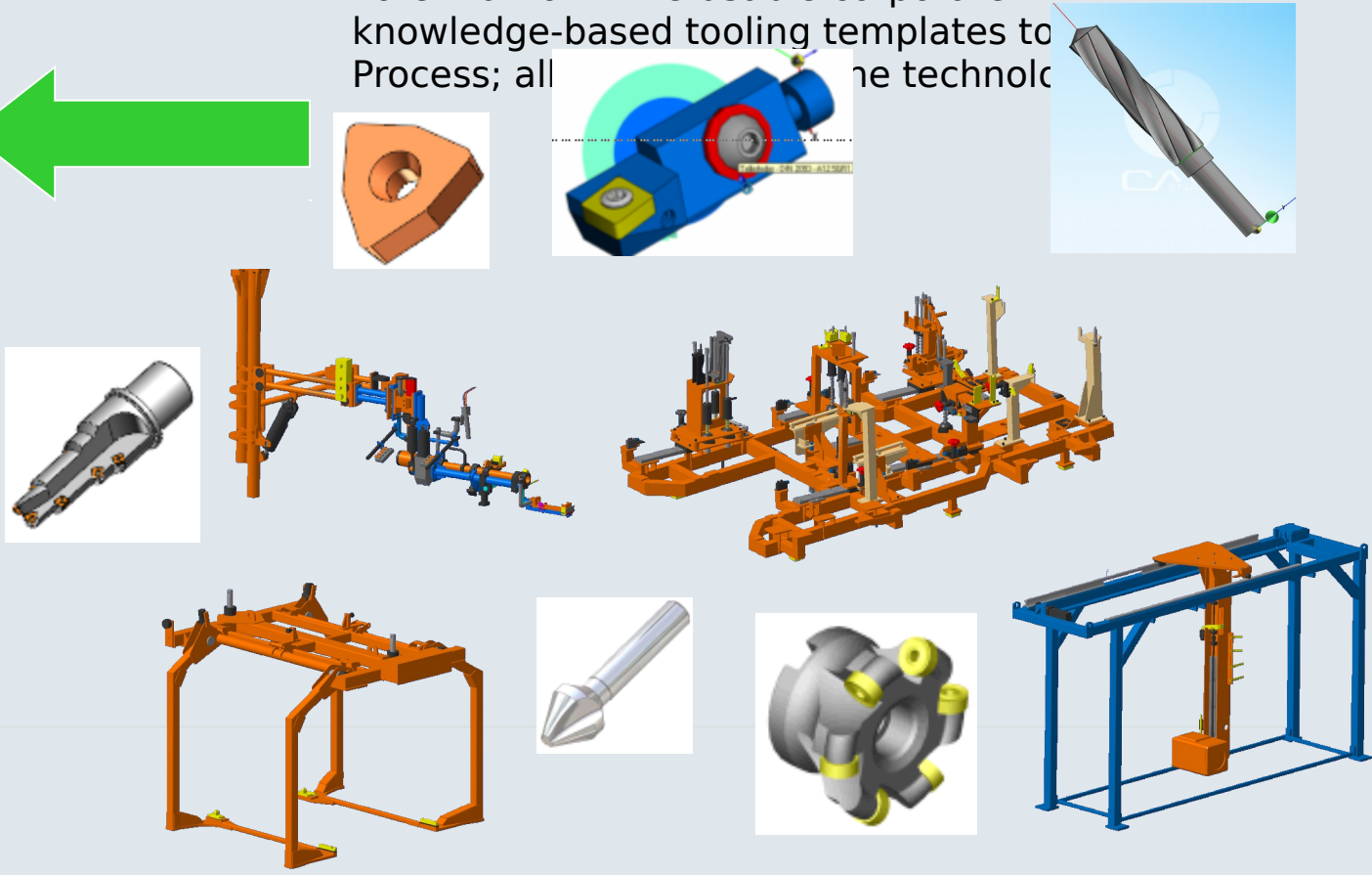
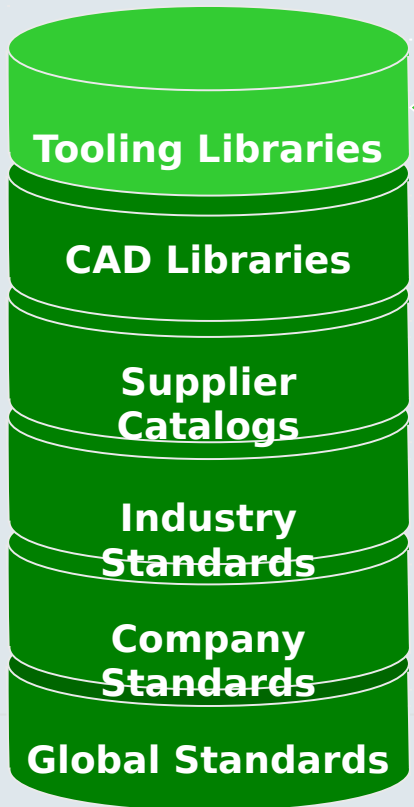
## Existing Math Data

Existing CAD libraries scattered across multiple databases and locations



## Best-Practice Tooling Libraries

Potential to link re-usable corporate knowledge-based tooling templates to Process; all the technology

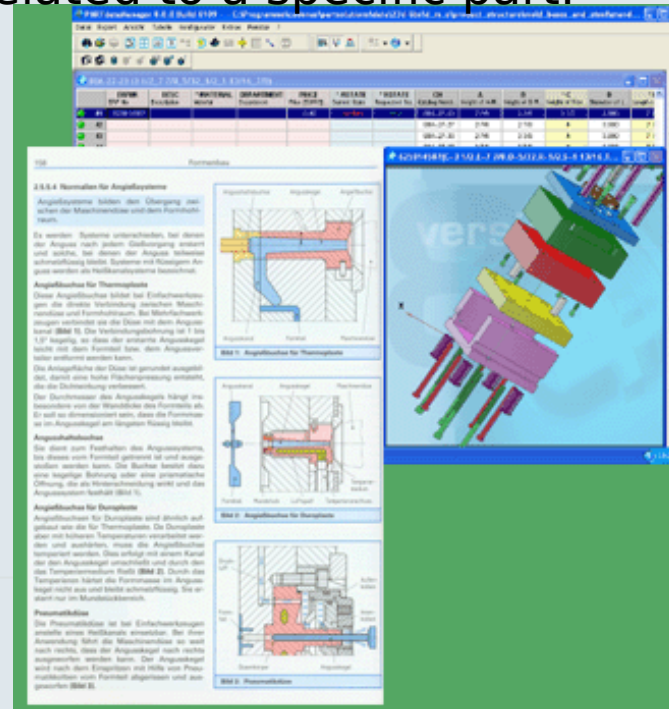


# Clustering and Classifying Standards...



## Linked Documents & Content

Spec sheets, manufacturing and purchasing docs... any document related to a specific part.



# The Digital Envelope..... Form, Fit, Function.....



02CA04001S (Active) - Pro/ENGINEER

File Edit View Insert Analysis Info Applications Tools PARTSolutions Window Help

02CA04001S.ASM

- 02XX040SCAS01.PRT
- 02XXX.PRT
- CA040040017.PRT
- B0400108.PRT
- 281FS06201S.ASM
  - 281XX06201SFS.PRT
  - 281XXX.PRT
  - WFS06201.PRT
  - B0620108.PRT
  - WFS06201.PRT
  - B0620108.PRT

PARTdataManager 8.0.24 Build 15104 - - C:\Program Files\cade...

File Export View Table Configurator Extras Window ?

	PN	* CASTER	DIA	WIDTH	TYPE	CAP	OH	SL
	Part No.	Caster Type	Wheel Diamet...	Wheel Width [...]	Wheel Type	Rated for Ma...	Overall Height...	Swivel Li...
27	281FS06201	Swivel	6	2	Drop Forged			
28	281CA06201	Swivel	6	2	Cast Iron	2000	7-1/2	2-1
29	281TM06201	Swivel	6	2	Phenolic	2000	7-1/2	2-1
30	281NG06201	Swivel	6	2				
31	281PD06201	Swivel	6	2	Pol...			
32	281PI06201	Swivel	6	2	Pol...			
33	281PM06228	Swivel	6	2	Polyure...			
34	281CH06201	Swivel	6	2	Cast...			

281FS06201S

Model OK

- Front
- Rear
- Right
- Left
- Top
- Bottom

Current view

Thick

Thin

#55 100.0 User

- Part '281FS06201S' not changed since last regen.
- 281FS06201S has been saved.
- Select any reference for auto type constraining.
- You are leaving this component as packaged.
- Component packaged successfully.

# Configure "As Purchased" Condition.....

PARTdataManager 8.1.02 Build 15041 - PARTsolutions by CADENAS - C:\Program Files\cadenas\partsolutions\data\23d-libs\ai\blind\_bolts\inas1671.prj

File Export View Table Configurator Extras Window PARTAssistant Tools ?

Assembly NAS1671-3L8B

	FD	ND	A	C	* GR	* TYPE	Lubrication
eClass 5.0 (SP1):	First dash No.	Nom. Dia. [IN...]	A [INCH]	C Max. [INCH]	Grip Range [IN...]	Type	
1	-08	.164	.250-.244	0.268	.031-.093	Fastener with Self - Locking Provisions	Graphite Free D
2	-3	200	.312-.305	0.303	.470-.531	Fastener with Self - Locking Provisions	Graphite Free D
3	-4	.260	.375-.367	0.354	.094-.156	Fastener with Self - Locking Provisions	Graphite Free D
4	-5	.312	.437-.429	0.423	.094-.156	Fastener with Self - Locking Provisions	Graphite Free D
5	-6	.375	.500-.491	0.510	.157-.219	Fastener with Self - Locking Provisions	Graphite Free D

Bill of material

NB

→ NAS1671-3L8B 1

Settings

Preview dimension:

Dimensions

Directory

NAS1671 -...

Display mode:

NB = NAS1671-3L8B, LOD = HI\_AUTO

Fastener - Blind, Internally Threaded, External Sleeve, High Temperature, Prot...

06/22/2005 #5

100.0

Admin | Dev | Del



# Configure 'As Installed' Condition....

PARTdataManager 8.1.02 Build 15041 - PARTsolutions by CADENAS - C:\Program Files\cadenas\part solutions\data\23d-libs\ai\blind\_bolts\nas1671.prj

File Export View Table Configurator Extras Window PARTAssistant Tools ?

Assembly NAS1671-3L8B-

	* VIEW	D	H	J	K	L	N	PL	PDL
	View Manufact...	D Dia. [INCH]	H Max. [INCH]	J Dia. Max. [I...	K Max. [INCH]	L Ref. [INCH]	N [INCH]	PL Ref. [INCH]	PDL Ref. [INCH]
eClass 5.0 (SP1):									
1	Manufactured	.1625-.1645	0.069	0.244	0.246	0.340	0.375	0.388	0.828
2	Installed	.1970-.1990	0.113	0.300	0.281	0.385	0.375	0.484	0.868
3	Manufactured	.2580-.2600	0.135	0.384	0.325	0.447	0.375	0.493	1.030
4	Manufactured	.3095-.3115	0.160	0.427	0.390	0.550	0.500	0.542	1.282
5	Manufactured	.3725-.3745	0.190	0.516	0.470	0.660	0.500	0.506	1.351

NB = NAS1671-3L8B-, LOD = HI\_AUTO

Fastener - Blind, Internally Threaded, External Sleeve, High Temperature, Protr. | 06/22/2005 | #5 | 100.0 | Admin | Dev | Del

# René Descartes (1596-1650)

We're not philosophers, but his idea was a good one...



## **HIS IDEA...**

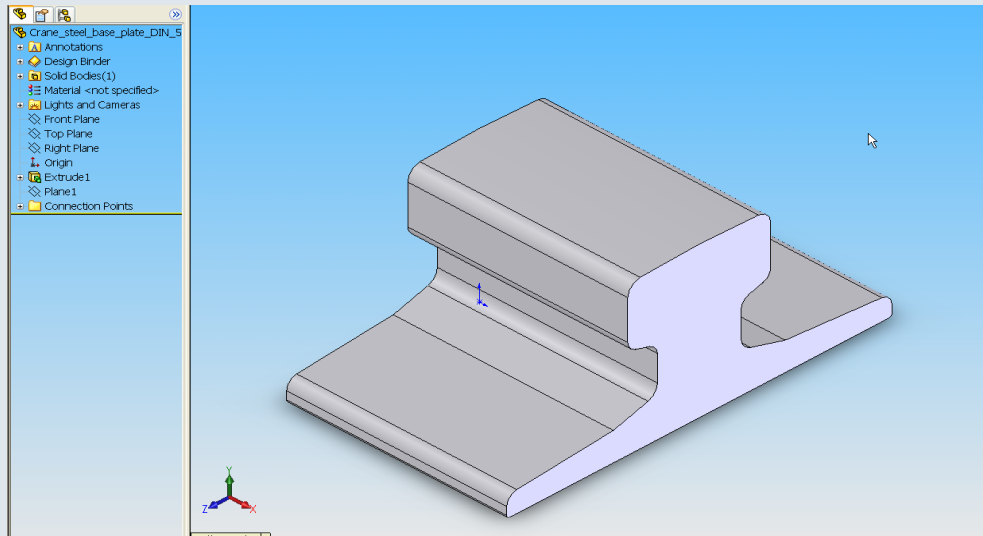
To analyze complex ideas you must break them down into their simple elements, reason can then intuitively be understood.

## ***Which Yielded.....***

## **OUR IDEA...**

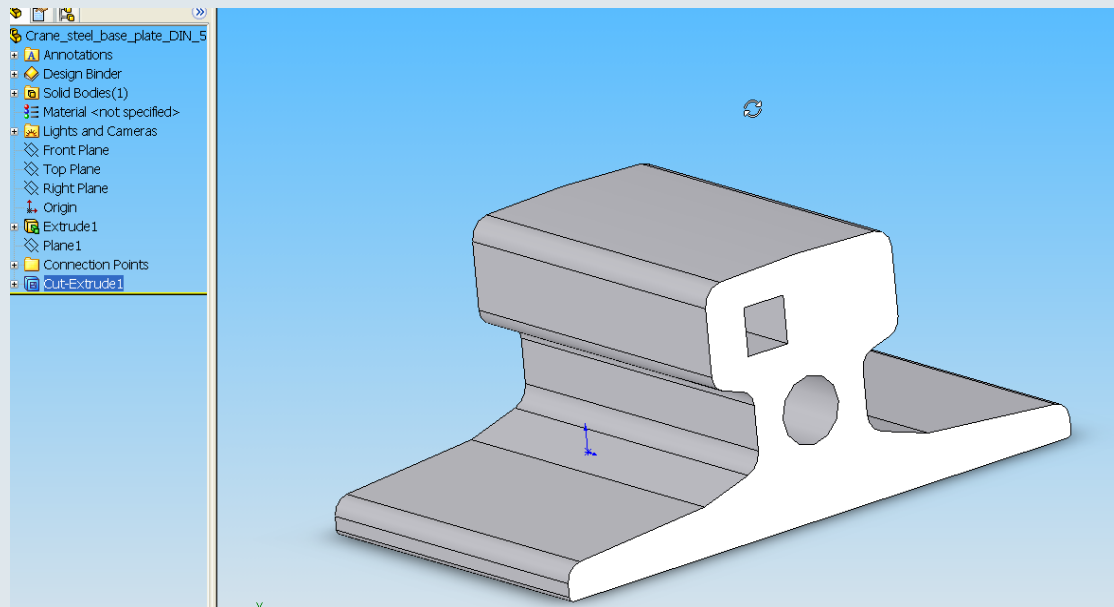
Create a Paradigm shift in the way Engineers approach Design re-use using technology

# The “Paradigm Shift” in Design Optimization... **PART** SOLUTIONS



**The “Back-of-the Envelope” sketch**

# The “Paradigm Shift” in Design Optimization...



**“Refining” the “Back-of-the Envelope” sketch.....**

# Final Results.....

The screenshot shows a CAD application window with a 3D model of a crane steel base plate on the left and a search results panel on the right. The search panel is titled "PARTsolutions geometric based alternative search" and shows a list of alternative parts with their hit rates, names, catalogs, and relative paths.

Search Path: C:\WINDOWS\TEMP\Crane\_steel\_base\_plate\_DIN\_536\_1\_A65x100.stl

Options:  
 Catalog: norm  
 all catalogs  
 use cluster search  
 show preview bitmaps

Buttons: Start search, Compare

Preview	Hit rate	Name	Catalog	relative path
	85.00%	DIN 536-1	<b>NORM</b>	norm/din_en_iso/st
	74.00%	DIN 3159 O	<b>NORM</b>	norm/din_en_iso/ar
	74.00%	DIN 504	<b>NORM</b>	norm/din_en_iso/le
	73.00%	DIN 1024-TB	<b>NORM</b>	norm/din_en_iso/st
	72.00%	EN 3435	<b>NORM</b>	norm/din_en_iso/m
	72.00%	DIN 41672	<b>NORM</b>	norm/din_en_iso/el
	71.00%	EN 10242 UA12	<b>NORM</b>	norm/din_en_iso/ro
	71.00%	DIN 739	<b>NORM</b>	norm/din_en_iso/le
	70.00%	EN 10242 UA2	<b>NORM</b>	norm/din_en_iso/ro
	70.00%	DIN 3489-DB3	<b>NORM</b>	norm/din_en_iso/zu

Find only "APPROVED" parts...

Engineering Finds A New Component



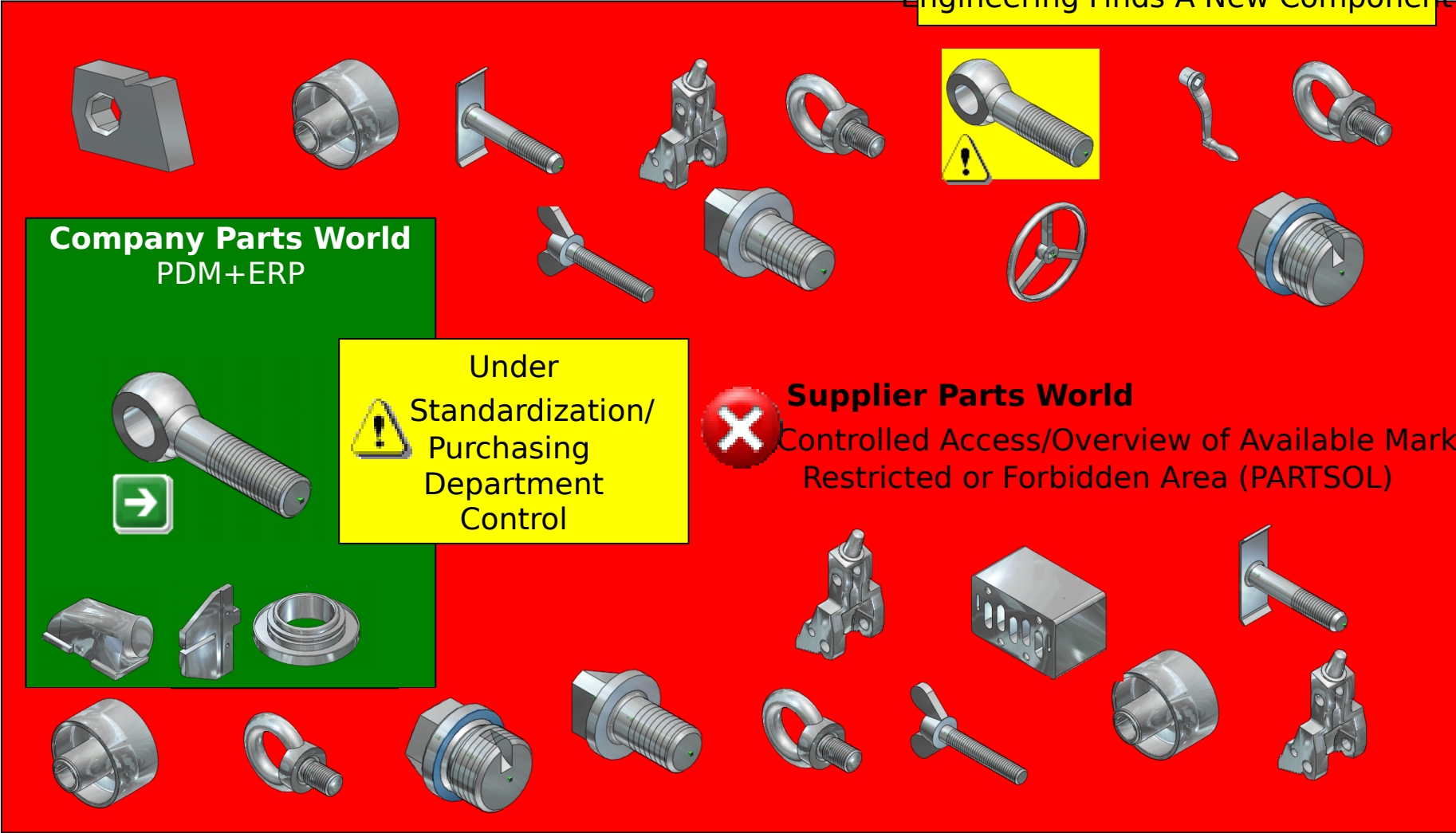
Company Parts World  
PDM+ERP

Under  
Standardization/  
Warning  
Purchasing  
Department  
Control



Supplier Parts World

Controlled Access/Overview of Available Market  
Restricted or Forbidden Area (PARTSOL)



# Managing and linking the part data...

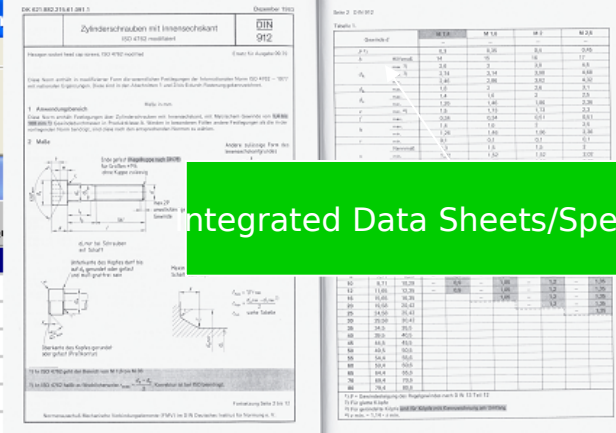


Real-time ERP/PDM/EDM Data  
Price, Delivery, Status, Etc...

PARTdataManager 8.0.0 Build 6109 - C:\Programme\cadenas\partsolutions\data\23d-libs\...

Zylinderschraube DIN 912 - M22x2x35

	ERP#	DESC	MATERIAL	ASTATE	RSTATE	IDNR	Ge...
	ERP No	Description	Material	Current State	Requested Sta...	Identnummer	Ge...
428	M22x2x35	3434535423	10.9	Released	-		
429	M22x2x40	32432421414		Released	New		
430	M22x2x45						
431	M22x2x50						
432	M22x2x55	432553535	12.9	Released	-		
433	M22x2x60	34256746765	12.9	Released	-		
434	M22x2x65	43254253543	10.9	Released	-		
435	M22x2x70	5342543543253	12.9	Released	-		
436	M22x2x80						
437	M22x2x90	325543253425	8.8	Released	-		
438	M22x2x100		8.8	Released	-		
439	M22x2x110	34254354325	8.8	Released	-		



Integrated Data Sheets/Specifications

Rules/Rules/Filters Control Display  
Out of ERP/PDM/EDM Systems

2D Vorschau

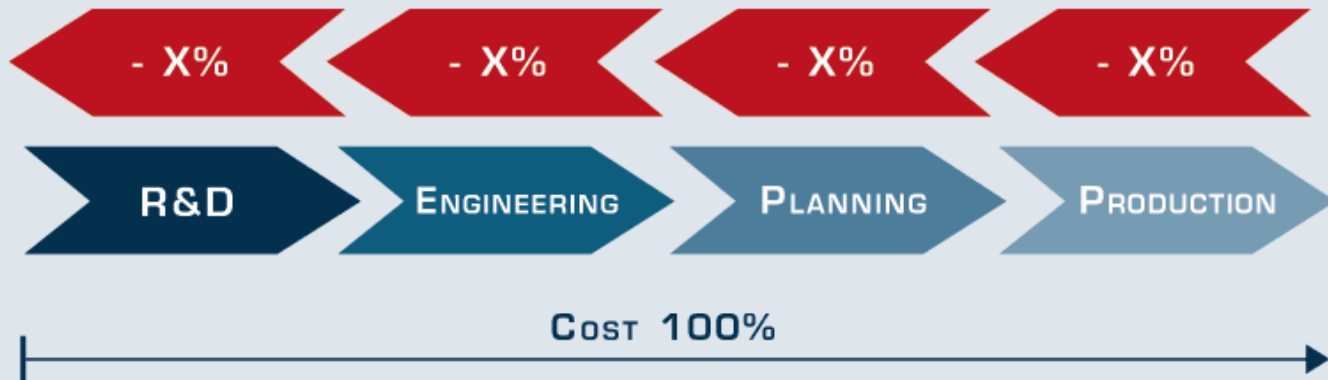
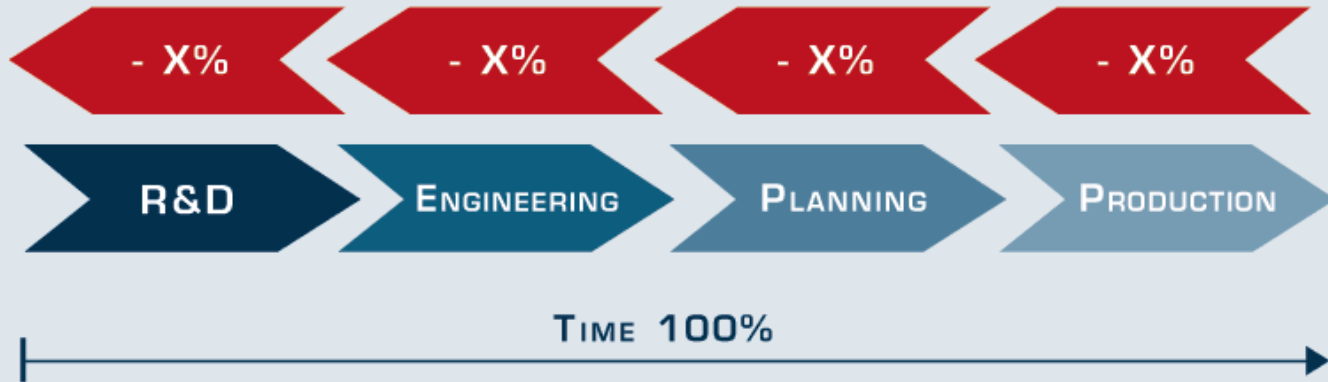
3434535423

Darstellungsmodi:  
Nenngewinde  
Kernloch

DIN 912 - Zylindr...

DIN 920 - Flachko...

# Process Optimization...yields.....





# Introduction

## **What is ASME B18.24?**

A numerical system for identifying fasteners, and all their characteristics

It supercedes B18.24.1, B18.24.2, B18.24.3,

## **When is it effective?**

ASME B18.24 was approved in April 2004, and is now in use

Released in printed form in June 2005

Adopted by DOD in August 2005

## **What is the Digital Fastener Library?**

A partnership between ASME and PARTsolutions has resulted in ASME B18 being represented in a Digital form, as an interactive software tool

The first standard to be represented digitally in ASME 125 year history

ASME B18.24-2004

(Supersedes ASME B18.24.1, B18.24.2, and B18.24.3)

# Part Identifying Number (PIN) Code System Standard for B18 Fastener Products

AN AMERICAN NATIONAL STANDARD



## How is the library used?

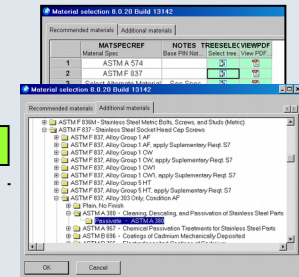
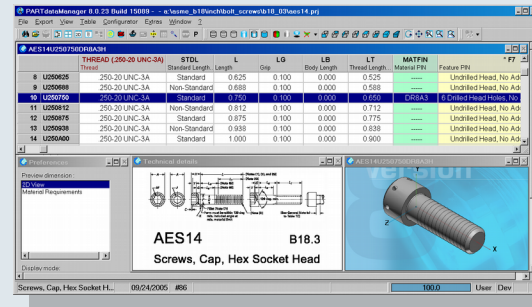
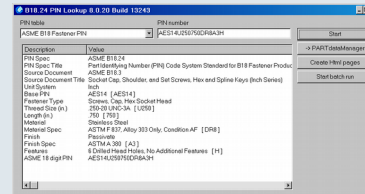
### ASME B18 Digital Fastener Library Five Major Utilities

The Digital Fastener Library can be used in 2 distinct ways

By anyone outside Engineering or the CAD department, to lookup PIN numbers and let the Library display the fastener characteristics and show a 3D view.

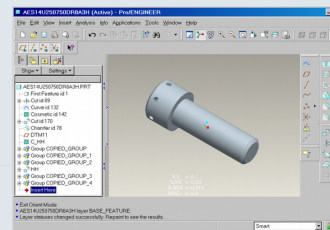
By Engineering to specify fasteners feature-by-feature, and let the Library produce the PINs and CAD model they need for their CAD system.

PINlookup Utility (standalone, or feeds into fastener specification)

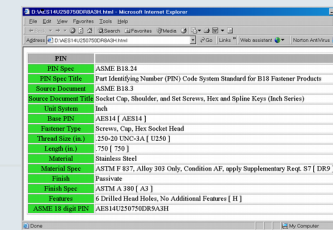


Fastener Specification within PARTdataManager

Material and Finish selection



Export the 3D solid model to any CAD



Export the PIN and fastener characteristics

## Overview

The Digital Fastener Library is an interactive system that provides:

Over 630 unique fastener types  
 Up to 500 different configurations per type  
 ASTM, ISO, SAE, IFI, UNS material and heat treat specs

The result: Literally *Millions* of unique fasteners can be defined and their PIN codes generated automatically

The Library can provide users with a native CAD model with precise PIN in virtually any major CAD system

The screenshot displays the PARTdataManager software interface. At the top, a menu bar includes File, Export, View, Table, Configurator, Extras, and Window. Below the menu is a toolbar with various icons for file operations and viewing. The main window shows a table of fastener data for 'AEB02C62540RAPSZA1'. The table has columns for F234PIN, F234PIN Field 234 PIN, NOMSIZE, NOMSIZE Nominal Size, THREAD, L, LG, LT, RBO, MATFIN, Select Feature, \*F7, F7PIN, PREF, \*TS, TENSTR, \*PL, and PROOFLOAD. A row for part number 2054 is highlighted in blue. A 'Material selection 6.0.25 Build 15109' dialog box is open, showing a tree view of 'ASTM Material Specifications' with sub-items like 'ASTM A 193/193M - Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Applications', 'ASTM A 194/194M - Carbon and Alloy Steel Nuts for Bolts for High-Pressure or High-Temperature Applications', 'ASTM A 307 - Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength', 'ASTM A 307, Grade A', 'ASTM A 153 - Zinc Coating (Hot-Dip) on Iron and Steel Hardware', 'ASTM A 153 - Zinc Coating (Hot-Dip) on Iron and Steel Hardware', 'ASTM B 633 - Zinc Coating (Hot-Dip) on Iron and Steel Hardware', and 'ASTM B 635 - Coatings of Zinc Mechanically Deposited on Iron and Steel'. Below the table, there are 'Links' and 'Technical details' sections. The 'Technical details' section shows a 3D CAD model of a bolt and a 2D technical drawing with various dimensions and notes. The 3D model is a purple hexagonal bolt with a threaded shaft. The 2D drawing shows the bolt's profile with dimensions H, J, R, A, B, F, G, L, L<sub>T</sub>, L<sub>G</sub>, L, and L<sub>B</sub>. Notes (3) through (15) are placed around the drawing. The bottom status bar shows 'Bolts, Hex', '#9064', '1000', and 'User: Dev'.

**The Digital Fastener Library is an interactive engineering tool**

## PIN Lookup Utility

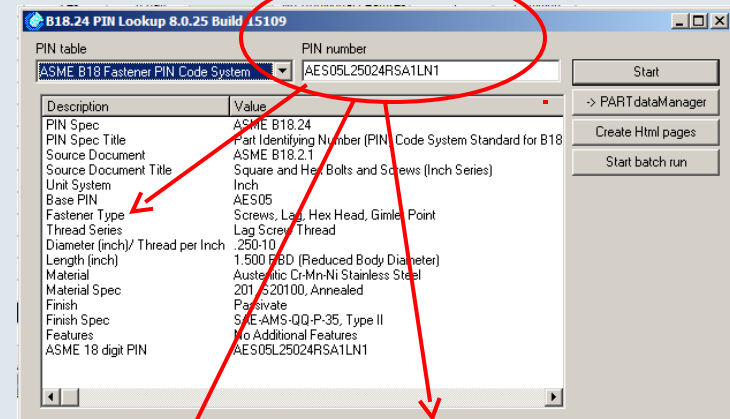
### 1. User enters a PIN

#### Capability

Pin lookup utility that takes an old 24 digit PIN, or new 18 digit PIN, and automatically generates that fastener

#### Benefit

Generates and lists all the characteristics specified by the PIN  
 Generates a 3D model so you can “see” the fastener. Rotate, pan, zoom, measure it or section it



### 2. The library delivers the details and the model



AES05L25024RSA1LN1													
	F234PIN Field 234 PIN...	NOMSIZE Nominal Size	THREAD Thread	L Length	LT Thread Length...	LG Grip	RBD Reduced Bod...	S MIN Shoulder Length	MATFIN Select Materia...	* F7 Select Feature	F7PIN Field 7 PIN	PREF Usage Notes	MATERIAL Material
198	L25022R	.250	.250-10	1.375	1.188	0.188	Yes	0.094	-	No Additional Features	1	Common	-
199	L250A50	.250	.250-10	1.500	1.250	0.250	No	0.094	-	No Additional Features	1	Common	-
200	L25024R	.250	.250-10	1.500	1.250	0.250	Yes	0.094	SA1LN	No Additional Features	1	Common	Austenitic Cr-Mn-Ni Stainless Steel
201	L250A62	.250	.250-10	1.625	1.313	0.313	No	0.094	-	No Additional Features	1	Common	201, S20100, Anne

# PIN Lookup Utility

## Capability

Send Fastener characteristics to others

Publish to web pages or other sources

## Benefit

Understand the specifications of a fastener in a easy-to-read format

Copy/Paste PIN numbers to avoid typing errors

PIN	
PIN Spec	ASME B18.24
PIN Spec Title	Part Identifying Number (PIN) Code System Standard for B18 Fastener Products
Source Document	ASME B18.6.3
Source Document Title	Machine Screws and Machine Screw Nuts (Inch Series)
Unit System	Inch
Base PIN	AESD8
Fastener Type	Screws, Machine, Flat Head, Undercut, Slotted
Thread Size (in.)	.250-28 UNF-2A [ F250 ]
Length (in.)	.438 [ 438 ]
Material	Carbon Steel
Material Spec	SAE J 429 - Grade 2 [ WA1 ]
Finish	Cadmium Plate
Finish Spec	ASTM B 766, Type I, Class 5 [ B4 ]
Features	Plain End-No Additional Features [ 1 ]
ASME 18 digit PIN	AESD8F250438WA1B41

**Sample Web page output**

# Define a Fastener

## ASTM Material Specifications Table - Top Level

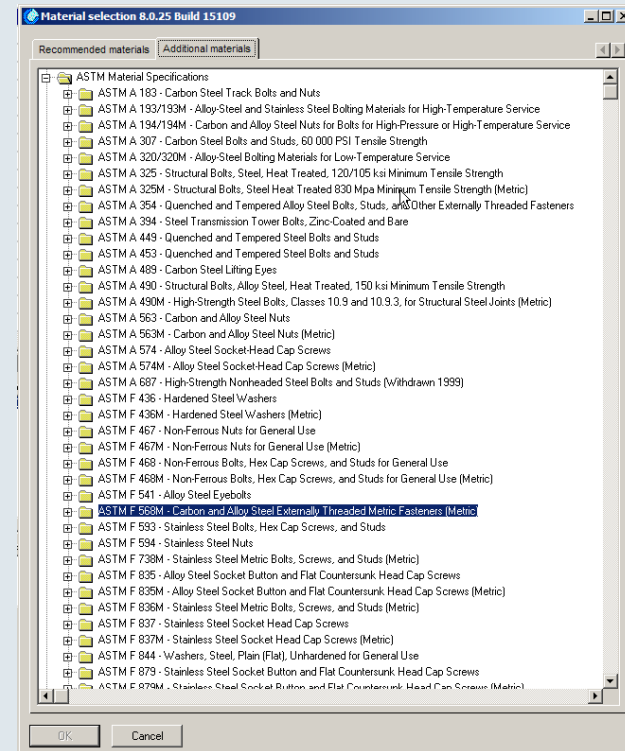
### Capability

Comprehensive table of fastener characteristics appropriate for each type. Automatically builds up the fastener.

- Nominal size, thread type, lengths, tensile strengths, finish specs, material specs, all head characteristics, special end types, radii, tolerances, etc
- ASTM material specifications

### Benefit

Easy, multiple-choice selection of characteristics needed for the fastening task at hand



	F234PIN Field 234 PIN...	NOMSIZE Nominal Size	THREAD Thread	L Length	LG Grip	LT Thread Length...	RBD Reduced Bod...	MATFIN Select Materia...	* F7 Select Feature	F7PIN Field 7 PIN	PREF Usage Notes	* TS Select Tensile ...	TENSTR Tensile Streng...	* PL Select Proof L...	PROOFLOAD Proof Load Lbs...
2049	C625B50	.625	.625-11 UNC-2A	2.500	1.000	1.500	No	-	Plain End-No Additional Features	1	Common	-	0	-	0
2050	F625B50	.625	.625-18 UNF-2A	2.500	1.000	1.500	No	-	Plain End-No Additional Features	1	Common	-	0	-	0
2051	C62540R	.625	.625-11 UNC-2A	2.500	1.000	1.500	Yes	-	Plain End-No Additional Features	1	Common	-	0	-	0
2052	F62540R	.625	.625-18 UNF-2A	2.500	1.000	1.500	Yes	-	Plain End-No Additional Features	1	Common	-	0	-	0
2053	C625B50	.625	.625-11 UNC-2A	2.500	1.125	1.500	No	-	Plain End-No Additional Features	1	Common	-	0	-	0

**Portion of Fastener Specifications Table**

# The 18 Digit PIN is Generated

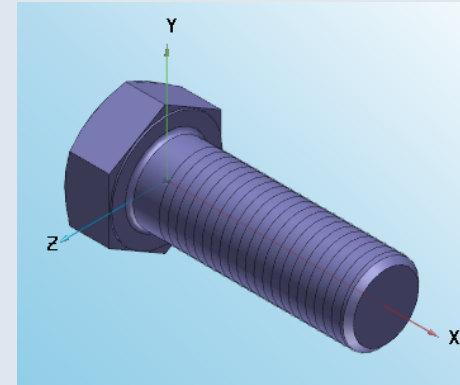
## Capability

Automatic generation of the new 18 digit PIN number for the fastener defined.

## Benefit

Calculated automatically; reduces errors when trying to assemble the number manually

PIN number is imported into each CAD system also, to ensure correct BOM and ordering.



**PIN Code Number :**  
**AES01CA12C25AP5A21**

- ASME B18.24 Fields  
 1 - Fastener Type / Base PIN  
 2 - Thread Configuration  
 3 - Fastener Size  
 4 - Length/Other Dimensions  
 5 - Material and Treatment  
 6 - Plating, Coating, and Passivation  
 7 - Additional Features

18 digit PIN	Base PIN	Thread Configuration	Fastener Size	Length/Other Dimensions	Material and Treatment	Finish and Coating	Features
	B18 Fastener Family & Type	Thread Configuration & Size		Material/Finish	Additional Features		
AEB02C250A50AP4A11	AEB02	C	250 A50	AP4	A1	1	
B18 Fastener PIN Example	Field 1	Field 2	Field 3	Field 4	Field 5	Field 6	Field 7

**Excerpt from B18.24**

# Automatic 3D Model Generation

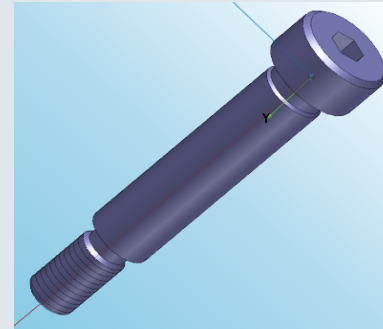
## Capability

Automatic generation of a dynamic 3D model of the defined fastener for visual verification. The Library can then provide a *native* CAD model in virtually any CAD system. Over 85 formats are possible.

## Benefit

Virtually all major CAD systems get a *native* model, so you get the correct, complete part in your CAD system

The 18 digit PIN travels with the part into your CAD, so BOM and ordering are ensured



**Native**  
**Inventor**  
**AutoCAD**  
**Pro/Engineer**  
**Unigraphics**  
**UG-NX**  
**I-deas**  
**SolidEdge**  
**SolidWorks**  
**Catia V4**  
**Catia V5**  
**...more**



## PIN Converter Utility

### Capability

A converter that will take old 21 digit PINs and automatically create the new 18 digit format

The library delivers the specifications and the 3D model

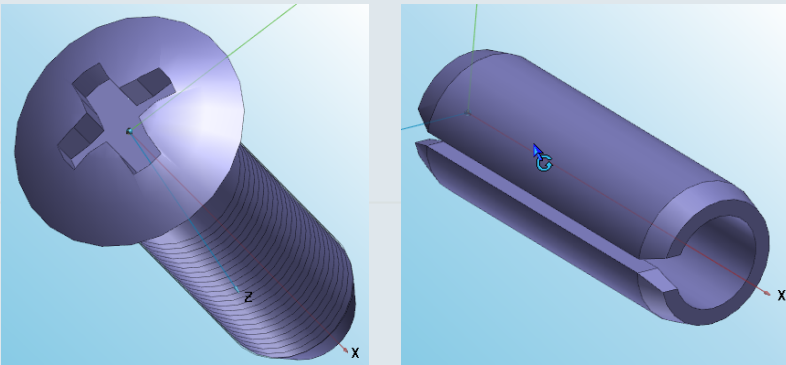
### Benefit

Eliminates the manual 12 step process using conversion tables

Ensures accuracy

Makes transition to the new system easy

Generates a dynamic 3D model for visualization, and ready for import to any CAD



**NONMANDATORY APPENDIX A**

**B18.24.1, B18.24.2, B18.24.3**  
**PIN SUCCESSION INSTRUCTIONS**

These instructions are meant for use with the worksheet in Fig. A-1. Following that is a 21-digit PIN succession example.

- (1) Enter cancelled 21 digit PIN.
- (2) Demarcate digit 1 (field 1) PIN.
- (3) Based on resolved logic for digit 1, enter the applicable "next table" value in cell A2 and the "table pg#"  
value in cell C2.
- (4) Demarcate the next 6 or 7 digits (field 2 value) as applicable from "next length" value in cell A2.
- (5) Enter field 2 PIN21 value into cell B2.
- (6) Look up cell B2 PIN21 value in Table B-2 or B-3, as applicable. Enter resolved PIN18 value into cell D2.
- (7) Enter table references by listing them vertically into worksheet beginning from cell A3. Use the simpler "Bxxx-x" format (table-field length) e.g., B136-1 rather than the "[B-xxx],x," format in Tables B-2 and B-3. For example, [B-136] 1.
- (8) Demarcate remaining fields according to "next length" values starting from cell A3 downward.
- (9) Enter remaining demarcated field values by listing them vertically from cell B3 downward.
- (10) Enter the page numbers vertically beginning from cell C3 downward.
- (11) Lock up PIN18 values for tables listed in column A starting from A3 downward. Enter PIN18 values into column D.
- (12) Transpose vertical PIN18 values from column D horizontally to "AE" entry field at bottom of worksheet. This resolves the cancelled B18.24.1-3 PIN to a superseding 18 digit B18.24 PIN.

### PIN Conversion 12-step Instructions



if digit 1 above = **B, M, S, or T**  
then cell A2 below has a value of **B2-7**  
if digit 1 above = **E, N, P, R, V, or W**  
then cell A2 below has a value of **B3-6**

	A	B	C	D
	next—next table—length	PIN21	table pg. no.	PIN18
1	B 2-7	210NA01		AE B03
2	B 4-1	C		
3	B 6-2	AD		
4	B 11-2	16		
5	B 134-5	468GA		
6	B 136-2	AB		
7	B 137-1	1		

### PIN Conversion Step/Table #9

# PARTsolutions eOTD Workflow...

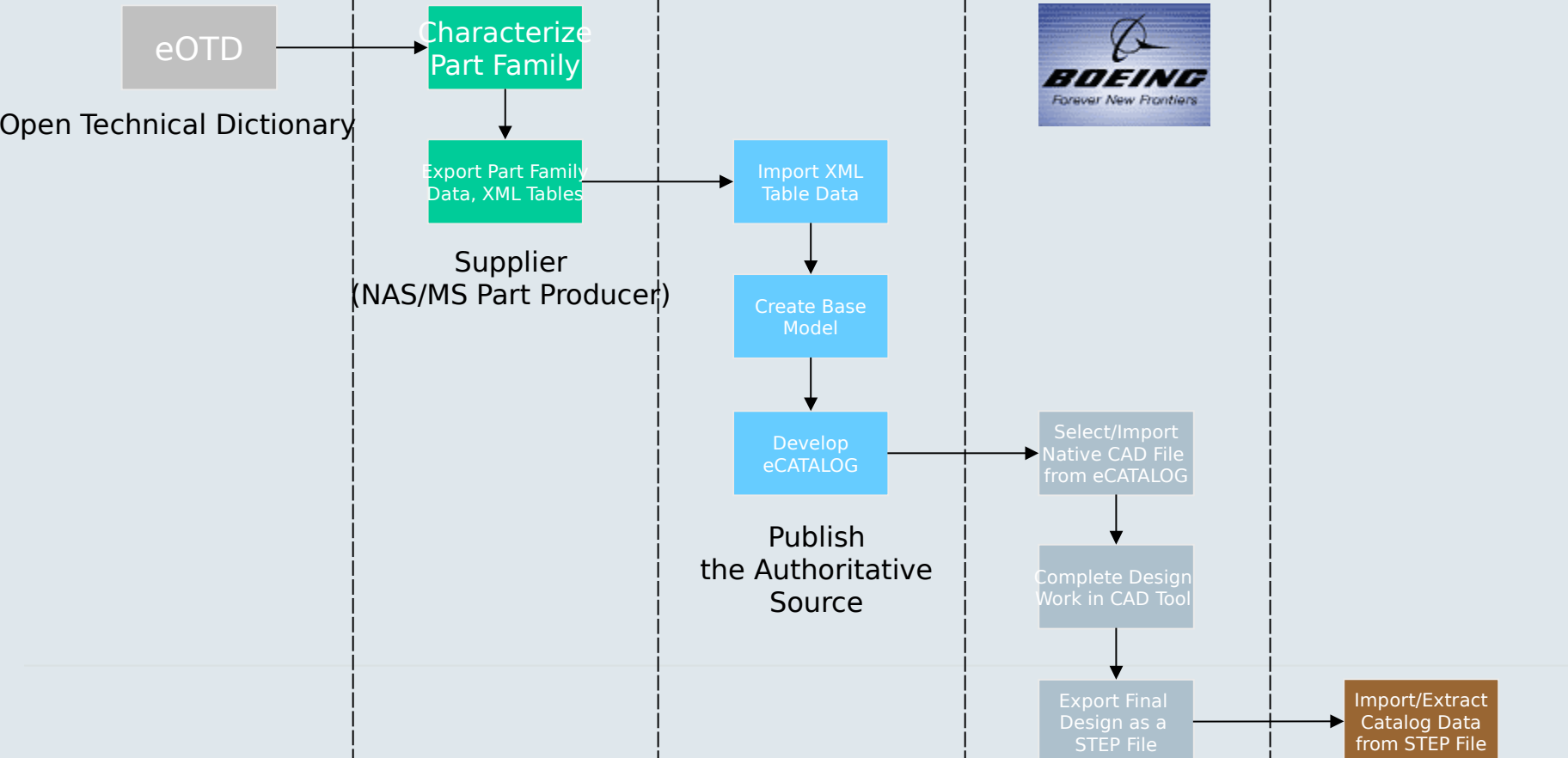
Supporting the eOTD cataloging standard



PARTsolutions

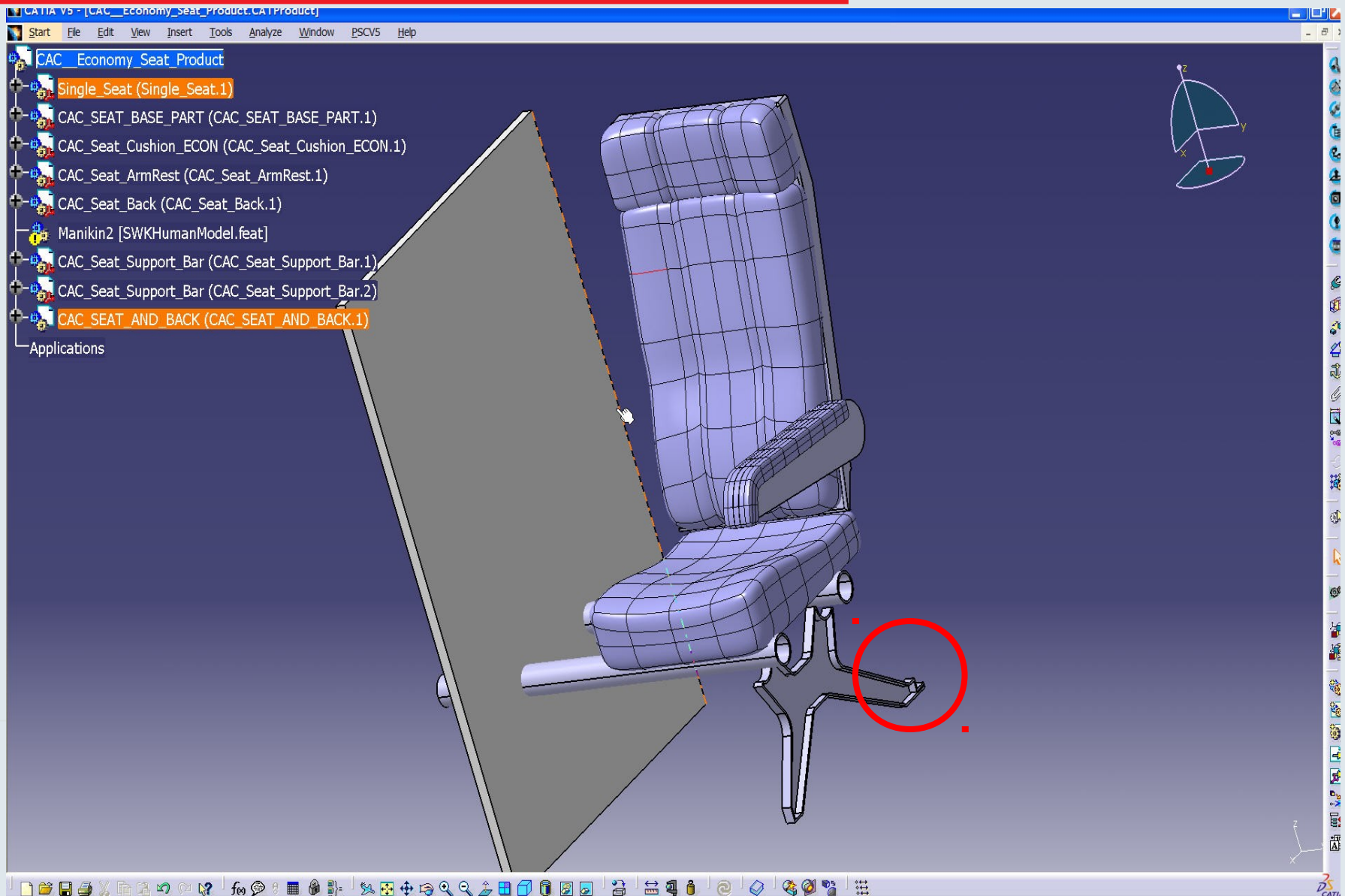
Boeing  
(OEM)

DoD/DLA  
(Customer)



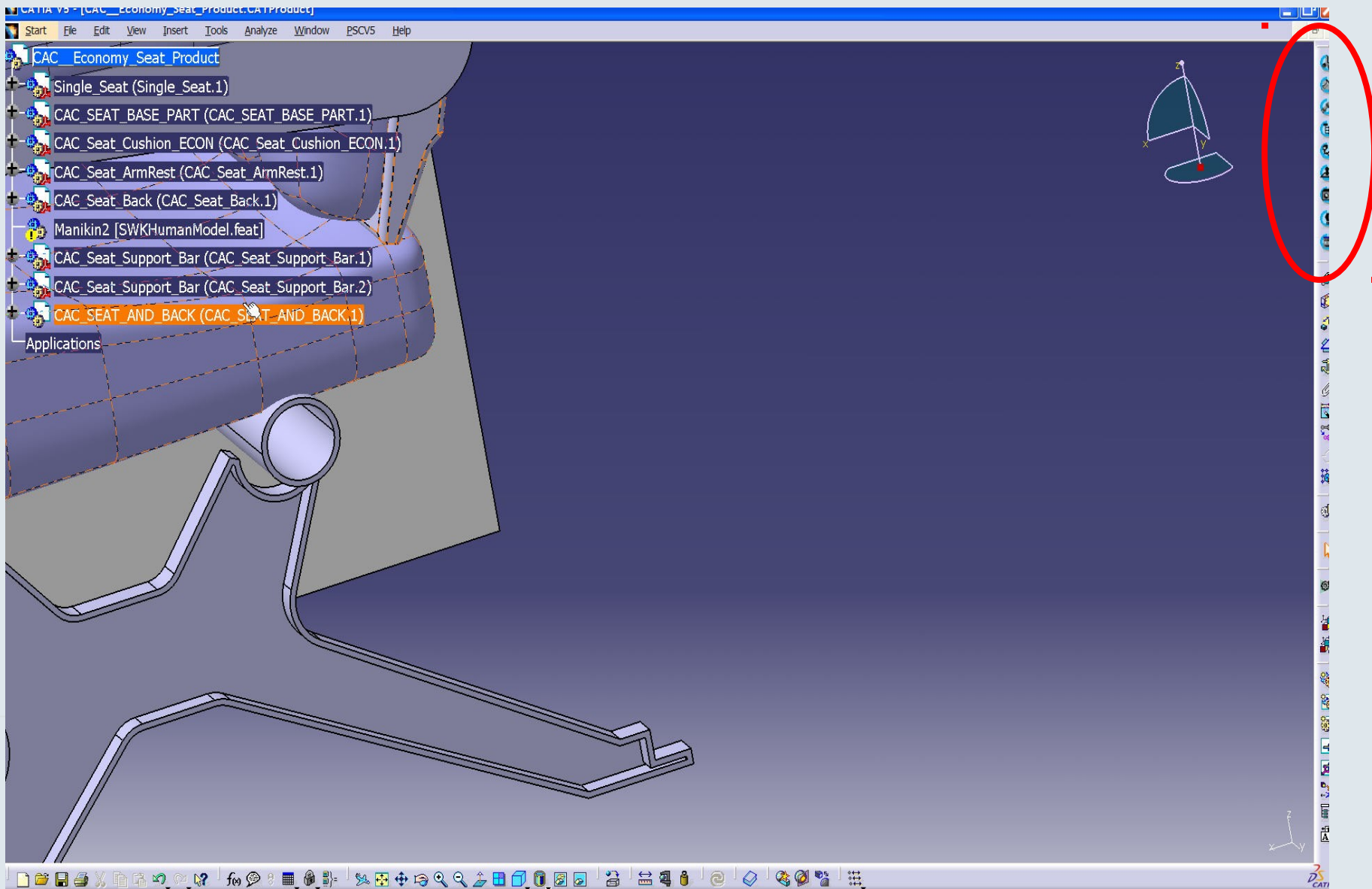
# PARTsolutions Workflow...

## Supporting the eOTD cataloging standards



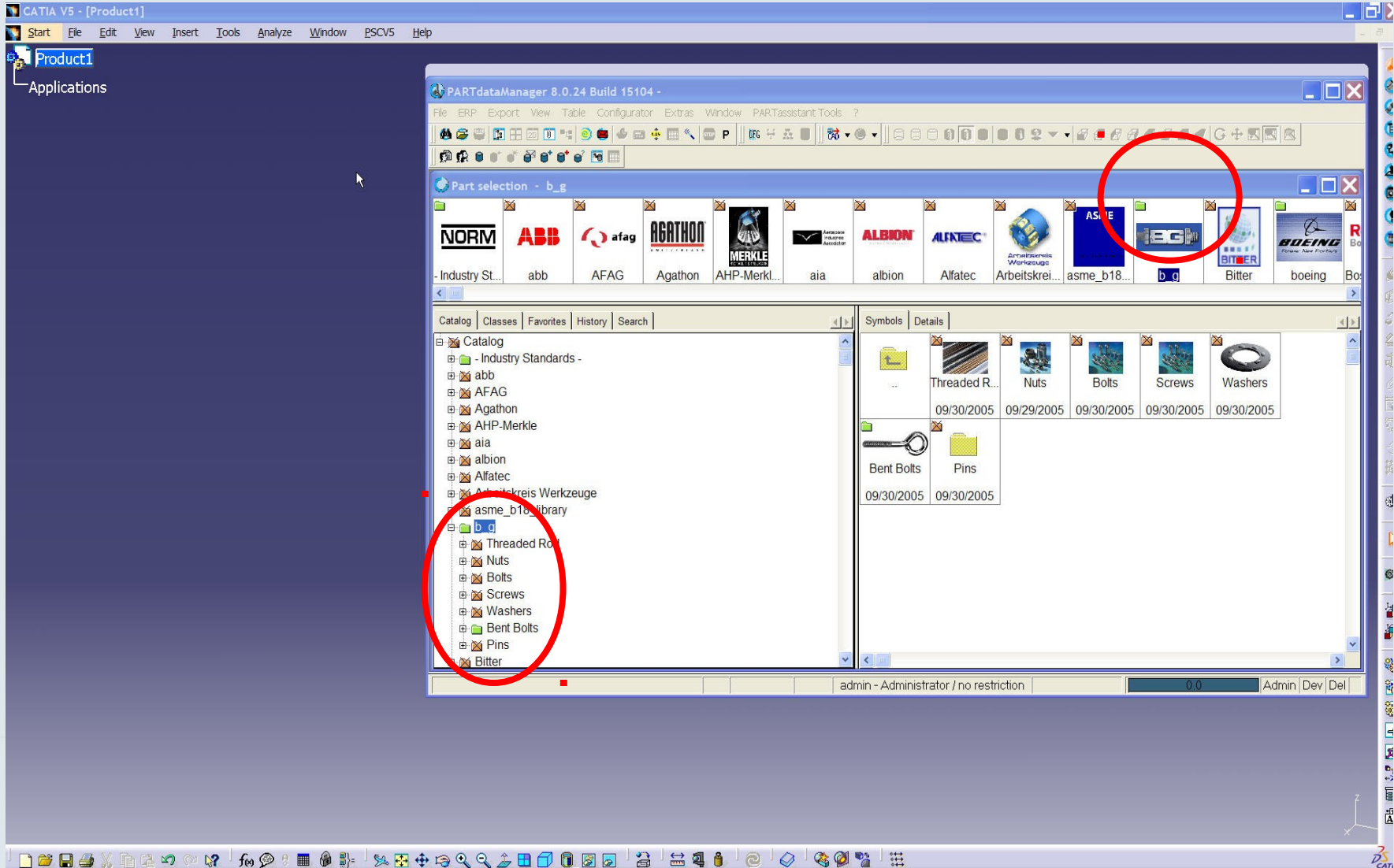
# PARTsolutions Workflow...

## Supporting the eOTD cataloging standards



# PARTsolutions Workflow...

## Supporting the eOTD cataloging standards



# PARTsolutions Workflow...

Supporting the eOTD cataloging standards

PARTdataManager 8.0.24 Build 15104 - C:\Program Files\cadenas\partsolutions\data\23d-libs\b\_g\bolts\heavy\_hex\1a193\_b8.prj

File ERP Export View Table Configurator Extras Window PARTAssistant Tools ?

HEX BOLT 1018 1/2-13 X 3.5

	ERP_PDM_NUMBER ERP-Number	BG_PART_NR B&G PART NR	ESN EOTD ESN #	ESCN EOTD ESCN #	ESPI EOTD ESPI #	ESPN EOTD ESPN #	LOCATION1 SEATTLE	LOCATION2 HUNTINGTON ...	LOCATION3 ST. LOUIS	MAT_NAME Material
1										
2	HB-13579	12135	EX-3893493	BOLT:MACHINE	024165	THREAD QUANTITY PER INCH				
3										
4										
5										
6										
7										
8										

Technical details

Directory

- EG
- AISI 1018 ...
- EG
- B5F5B3 - ...
- EG

Heavy Hex Bolts | 10/01/2005 #8 | admin - Administrator / no restriction | 100.0 | Admin Dev Del

# PARTsolutions Workflow...

Supporting the eOTD cataloging standards

The screenshot displays the PARTdataManager 8.0.24 software interface. The main window shows a 3D model of a hex bolt with a coordinate system (Y-axis). To the left, there are technical drawings of the bolt, including a side view with dimensions (H, E, R, L<sub>1</sub>, L, (R<sub>1</sub>), 30° +0.05, -0.15) and a top view with dimensions (F, I, G, J). A red circle highlights the 'Export' menu, specifically the '3D system neutral' sub-menu, which includes options like DXF 3D, IGES 3D, SAT binary 3D, SAT ascii 3D, and STEP 3D.

The data table below the 3D model contains the following information:

ESPI	ESP	LOCATION1	LOCATION2	LOCATION3	MAT_NAME
EOTD ESPI #	EOTD ESP #	SEATTLE	HUNTINGTON ...	ST. LOUIS	Material
CHINE	024165	THREAD QUANTITY PER INCH			

At the bottom of the interface, there is a status bar that reads 'Create native file'.

# PARTsolutions Workflow...

## Supporting the eOTD cataloging standards

The screenshot displays the PARTdataManager 8.0.24 software interface. The main window shows a table with columns for SPI, ESPN, LOCATION1, LOCATION2, LOCATION3, and MAT\_NAME. A red circle highlights the 'Export' menu, which is open to show various file formats. The '3D CAD formats' sub-menu is selected, listing numerous CAD systems and their macro formats. Below the menu, a 3D model of a hex bolt is shown in a perspective view, with a coordinate system (X, Y, Z) visible. To the left of the 3D model, there are technical drawings of the bolt, including a side view with dimensions and a top view. The interface also includes a 'Directory' panel on the left and a status bar at the bottom.

SPI	ESPN	LOCATION1	LOCATION2	LOCATION3	MAT_NAME
SPI #	EOTD ESPN #	SEATTLE	HUNTINGTON ...	ST. LOUIS	Material
4185	THREAD QUANTITY PER INCH				

Export menu options:

- 2D CAD formats
  - 2D system neutral
- 3D CAD formats
  - 3D system neutral
  - Image formats
  - 3D non CAD formats
- PS2-V1 2D
- PS2-V2 2D
- PS3-V2 3D

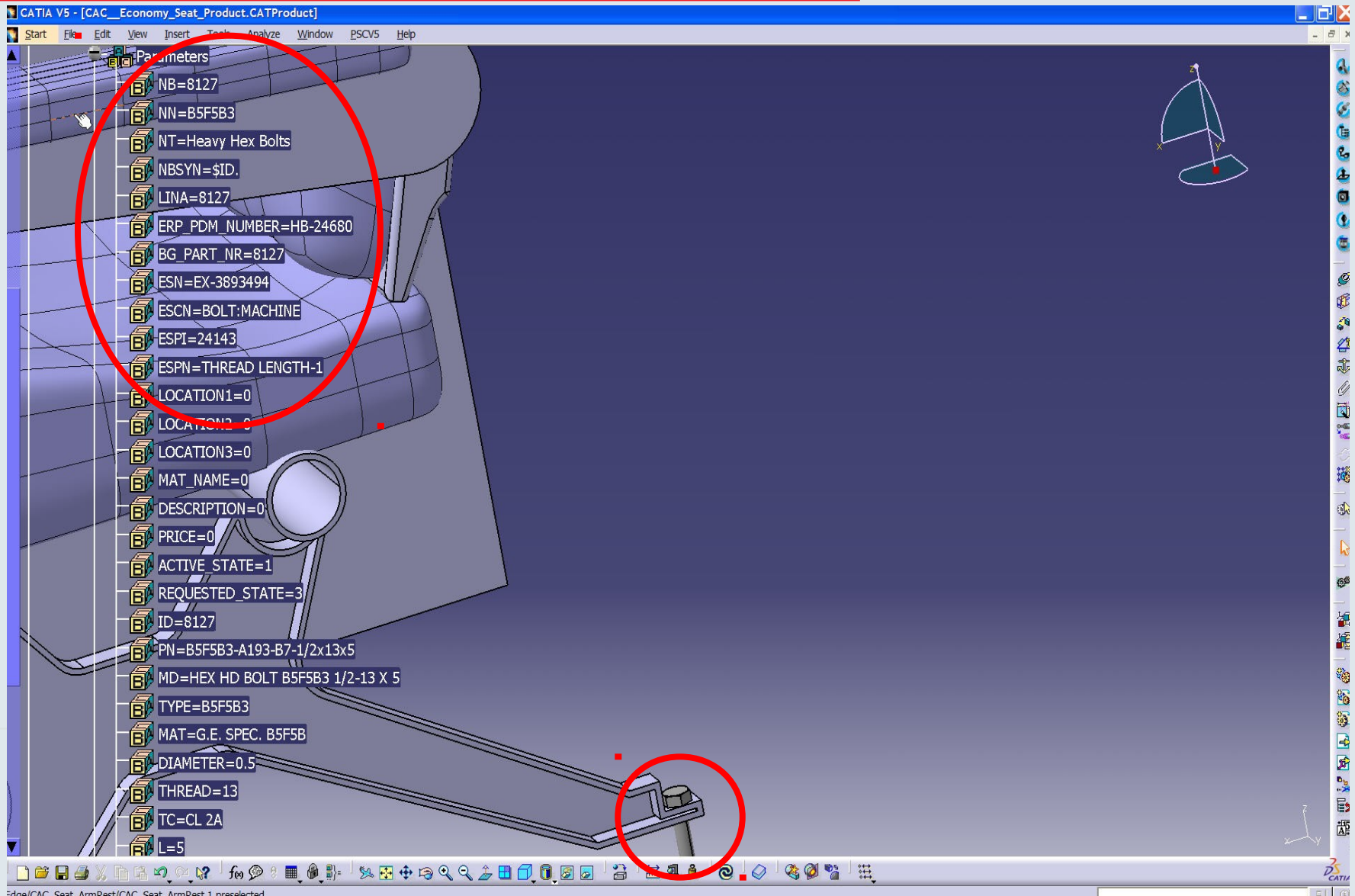
3D CAD formats sub-menu options:

- Allplan 3D
- CATIA V4 IUA Macro 3D
- CATIA V5 CATscript Macro 3D
- DWG 3D
- Inventor 3D
- CADCEUS Macro 3D
- Fides Macro 3D
- Ideas Macro 3D
- Ideas V9 Macro 3D
- Inventor Macro 3D
- SolidDesigner Macro 3D
- Cadd5 Macro 3d Translator
- Mechanical Desktop Macro 3D
- PRO-Desktop Macro 3D
- RobCad 3D
- SolidWorks 3D (>=2004)
- SolidWorks Macro 3D



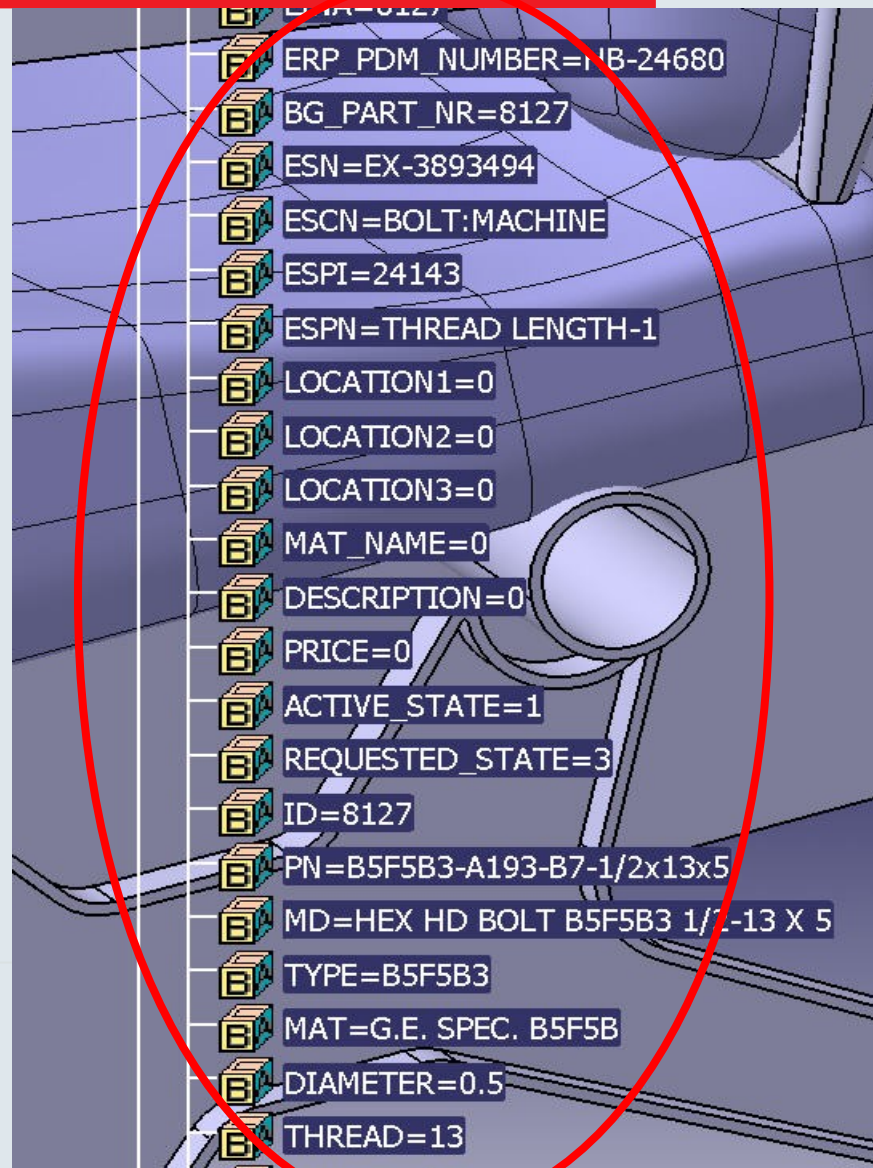
# PARTsolutions Workflow...

Supporting the eOTD cataloging standards



# PARTsolutions Workflow...

Supporting the eOTD cataloging standards



- The requirement to AUTHOR and MAINTAIN standards as an authoritative source; The need to “Standardize Standards”
- Agency requirements for Audit trail (FDA, NTSB, FAA.....)
- Supports ISO 9000 Best Practices and other Standard Part Management Process Specifications
- Native Integration to any CAD/PDM/ERP system; if technologies change in the Enterprise the IT investment is secure.
- Completely Avoid Part Proliferation or “Jungle of Parts”.
- Standardize and globally share your libraries with your Supply Chains/Work Teams.
- Inline multi-language Support which enables global work-team communication.

## THANK YOU

**To learn more about the benefits of digital catalogs or intelligent standard parts management, please contact us:**

**[www.part-solutions.com](http://www.part-solutions.com)**

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**E-Mail: [\\_\\_](mailto:info@part-solutions.com)**

Plus Detroit, Los Angeles, New York,  
Augsburg, Stuttgart, Wolfsburg, Paris

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